# Seattle Apartment Market Alignment Analysis (2011-2016)

**Adrien Renaud**

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**Committee:**

**Chris Bitter**
**George Rolfe**

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# Abstract

**Seattle Apartment Market Alignment Analysis**
**(2011-2016)**

**Adrien Renaud**

**Chair of the Supervisory Committee:**
**Assistant Professor Christopher Bitter**
**Department of Urban Design & Planning**

This thesis will explore the alignment between demand and the supply of apartment pipeline developed in the Seattle area through 2016. This topic specifically deals with the possibility of overdevelopment or a bubble in the apartment market, which could result in lower returns for investors. This threat to investor expectations necessitates the assessment of the alignment between supply and demand as a matter of due diligence for any investor. This thesis will use a Market Analysis method and Net Absorption Model technique to forecast through 2016. Tenure and apartment capture ratio will be the specific focus of the analysis. The primary findings of the research show that the boom portion of a possible bubble is already well underway. A bubble effect is almost unavoidable, due to the use of contemporary financial instruments. Tenure and Apartment Capture Ratios will need to be very elevated to avoid record high vacancy rates, which is unsustainable for this elongated duration. The resulting misalignment of the market will likely occur before 2016.Other factors will soften the impacts of overbuilding the apartment stock, like apartment conversion into condominiums, financial market changes to apartment investment volumes, and investors purchasing previously owned residential properties for rental purposes, tight individual mortgage market credit, and Amazon.com's continued aggressive hiring in the center of Seattle.

# Table of Contents

# List of Figures

**Graphs**



**Maps**



**Tables**

## Abbreviations and Acronyms

| | | |
|---|---|---|
| ACR | – | Apartment Capture Ratio |
| ACS | - | American Communities Survey |
| AMI | - | Area Median Income |
| BAO | – | Business Analyst Online |
| CBD | - | Central Business District |
| CCR | – | Current Construction Rate |
| COMP's | - | Competitive Properties |
| COO | - | Certificate Of Occupancy |
| D&S | – | Dupre & Scott Apartment Advisors |
| FFIEC | - | Federal Financial Institution Examination Council |
| HH | - | House Holds |
| HUD | - | U.S. Department of Housing and Urban Development |
| KC | – | King Central |
| KN | – | King North |
| M | - | Market |
| MSA | - | Metropolitan Statistical Area |

| | | |
|---|---|---|
| NAM | - | Net Absorption Model |
| PS | - | Prorata Share |
| RHH | - | Renter Households |
| RT | - | Renter Tenure |
| ROI | - | Return On Investment or Return Of Investment |
| SFH | - | Single Family Home |
| SKCA | – | Seattle King Central Area |
| SKEA | - | Seattle King East Area |
| SKNA | - | Seattle King North Area |
| SMSA | – | Seattle Metropolitan Statistical Area |
| SOV | - | Single Occupancy Vehicle |

## Definitions

**Area Median Income (AMI):**

1. Midpoint in the family-income range for a metropolitan statistical area or for the non-metro parts of a state. The figure often is used as a basis to stratify incomes into low, moderate and upper ranges. (FreddieMac)

2. Median income is the amount which divides the income distribution into two equal groups, half having income above that amount, and half having income below that amount. Mean income (average) is the amount obtained by dividing the total aggregate income of a group by the number of units in that group. The means and medians for households and families are based on all households and families. Means and medians for people are based on people 15 years old and over with income. (U.S. Census Bureau)
3. A measure of a population's ability to afford to purchase a particular item, such as a house, indexed to the population's income. An affordability index uses the value of 100 to represent the position of someone earning a population's median income, with values above 100 indicating that an item is less likely to be affordable and values below 100 indicating that an item is more affordable. (Investopedia)

4. The **median household income** is commonly used to generate data about geographic areas and divides households into two equal segments with the first half of households earning less than the median household income and the other half earning

more.[1] The median income is considered by many statisticians to be a better indicator than the average household income, as it is not dramatically affected by unusually high or low values. Household income is not to be confused with family or personal income. Household income is often the combination of two income earners pooling the resources and should therefore not be confused with an individual's earnings. Even though the term family income may sometimes be used as a synonym for household income, the U.S. Census Bureau defines the two differently. While household income takes all households into account, family income only takes households with two or more persons related through blood, marriage or adoption into account. (Wikipedia)

**Boom**: A period of time during which sales of a product or business activity increases very rapidly (Investopedia).

**Bubble:**

1. An economic cycle characterized by rapid expansion followed by a contraction (Investopedia).

2. A surge in equity prices, often more than warranted by the fundamentals and usually in a particular sector, followed by a drastic drop in prices as a massive selloff occurs (Investopedia).

3. A theory that security prices rise above their true value and will continue to do so until prices go into free-fall and the bubble bursts (Investopedia).

**Bust**: A period of time during which economic growth decreases rapidly, (Investopedia).

**Apartment Capture Ratio (ACR):** The portion of the residential market that household demand occupies.

**Elevated**: Referring to "Statistically Elevated" results. For the purposes of this thesis, only this term refers specifically to a value that is between the standard deviation off of the mean and less than the highest/lowest historic record value.

**Mathematical**: This term is used specifically in the context of an explanation of the calculation of Average Household Size for a necessary distinction and adjustment from the Census Bureau's methodology. In this case, the term is used to label the adjusted figures as being "mathematically" functional for the purposes of the NAM.

**Mean**: The simple mathematical average of a set of two or more numbers. The mean for a given set of numbers can be computed in more than one way, including the arithmetic mean method, which uses the sum of the numbers in the series, and the geometric mean method. However, all of the primary methods for computing a simple average of a normal number series produce the same approximate result most of the time. (Investopedia)

**Median**: The middle number in a sorted list of numbers. To determine the median value in a sequence of numbers, the numbers must first be arranged in value order from lowest to highest. If there is an odd amount of numbers, the median value is the number that is in the middle, with the same amount of numbers below and above. If there is an even amount of numbers in the list, the middle pair must be determined, added together and divided by two to find the median value. The median can be used to determine an approximate average. (Investopedia)

**Significant:** Referring to "Statistical Significance." The likelihood that a result or relationship is caused by something other than mere random chance. Statistical hypothesis testing is traditionally employed to determine if a result is statistically significant or not. This provides a "p-value" representing the probability that random chance could explain the result. In general, a 5% or lower p-value is considered statistically significant. (Investopedia)

**Rent Rate:** The amount of money paid over a specified time period for the rental of an asset, such as real property or an automobile. The lease rate that the lender earns from allowing someone else to use his property compensates him for not being able to put that property to another use during the term of the lease. (Investopedia)

Concessions will be considered implied in the any terms regarding rent rate.

**Standard Deviation:**

1. A measure of the dispersion of a set of data from its mean. The more spread apart the data, the higher the deviation. Standard deviation is calculated as the square root of variance. (Investopedia)
2. In finance, standard deviation is applied to the annual rate of return of an investment to measure the investment's volatility. Standard deviation is also known as historical volatility and is used by investors as a gauge for the amount of expected volatility. (Investopedia)

# Dedication & Acknowledgments

I would like to dedicate this thesis to Headmaster Ian Spencer of the Ben Bronze Academy. His dedication to his students is an inspiration for achievement.

To my loving parents who have always supported me in my interests academic or otherwise.

I want to extend a special thank you to Professor Chris Bitter and Professor George Rolfe for all of their guidance and advice throughout this research thesis process, as my thesis committee.

There were many other people, without whom this would not have been possible, and I want to thank you for your personal contributions.

# Preface

One of my favorite authors, John Krakauer, often starts his books by stating his personal biases upfront. Krakauer's ability to do this in a straightforward and pertinent manner enriches the reader's experience, allowing them to see the world through his eyes or adjusting what is said to their own perspective by understanding the difference of opinion or philosophy from the start. I hope to be able to do the same. I would like to acknowledge my opinion, perspective and bias on this subject of the apartment market, rental housing, the significance of the American dream, and other socio-economic topics, before starting the analysis. I do not prescribe to the American dream of owning my own detached single-family home (SFH) with a white picket fence in suburbia. I do believe that a broader variety of housing options would benefit us all for a variety of reasons; and for the purposes of this thesis, I am pro-apartment development.

I have lived in a range of properties including SFH, condominiums, apartments, college dorms and boarding houses. These different types of residents were located in a variety of settings and locations from rural to urban centers in: Paris, France; Hartford, Connecticut; Syracuse, N.Y.; Clinton, N.J.; St. Augustine, FL.; Boston, MA.; and Seattle, WA. I have also experienced several types of tenure including ownership, renting, and compensated. Some of these experiences were atypical, such as being a member of a board of trustees for a 52unit condominium complex and working as a live-in property manager at a college boarding house. In addition to the ranges of types of tenure, I also lived in a variety of different housing product types and designs. At one end of the spectrum is the compact smart growth tactics typical in most European countries, where progressive concepts of stewardship, a sense of duty to united societal responsibility, and to future generations is common. On the other end of the spectrum is the typical post-WWII, low density, sprawling, suburban, automobile-dependent, SFH, which cover much of America.

Of course, there is a wide variety between these two extremes, and I consider myself fortunate to have had the benefit of living in such a wide variety of environments. I am now 37, finishing graduate school, and renting an apartment in Seattle, Washington, which makes the topic of this paper particularly pertinent to my current living arrangement. Again, all of this is to give you, the reader, context to the perspective from which I write.

# Executive Summary

This thesis assesses the alignment of supply and demand in Seattle's apartment market through 2016. The possibility of overdevelopment, resulting in lower returns for investors necessitates the assessment of the alignment between supply of new development into the pipeline and shifts in demand. This assessment uses a Market Analysis and Net Absorption Model technique that forecasts through 2016.

This thesis includes a comprehensive literature review of three subtopics: the methodology, residential property demand drivers and indicators, and supply history for the apartment market. The findings from the literature review are:

1) Methodology: A type C fundamental market analysis is the most appropriate to address the central issue of this thesis, but rarely implemented by professionals (i.e., real estate developers and investment analysts) due to its cost and complexity.

2) Demand: The economic recession has suppressed many demographic drivers' impact on demand. Notably, record high rates of mortgage foreclosures have swung demographic housing tenure from owning to renting, but the recession's weak employment and stagnant incomes prevent affordability of new apartment development. These two factors limit the true or "net" demand and increase the gap in alignment to the pipeline of supply that is being constructed. Desperate financial markets are primarily driving the current apartment construction boom, while demographic drivers are suppressed.

3) Supply: The current supply of apartments is at a historically low volume, partially due to relatively low than anticipated rates of return for the apartment investment class since the 1920's. In addition, foreclosed properties being forcibly vacant while they pass through the court system has had several adverse impacts to the housing market. It is directly causing a temporary reduction of the total housing stock, starting in 2007 and continuing today. It also is worsening the rental housing shortage by slowing the

conversion process from owner occupied homes, through foreclosure process and bank owned or short sale process, into rental properties.

The research portion of this thesis will use a Market Analysis to assess the market and a Net Absorption Model technique to analyze the alignment between demand and supply. This will focus on the issue of renter tenure change and then apartment capture ratios. The demand drivers and indicators will measure economic indicators like home sales volumes, home sales prices and foreclosure activity; as well as demographic drivers like age cohorts, household formation, immigration, etc. The supply history on the quantity of stock will measure the volume of current stock and annual rate of newly constructed stock in Seattle to determine appropriate apartment capture ratios. The net absorption model tracks the development rates from 1998 and forecasts forward to 2016.

The findings of the research portion show oversaturation of the market is almost unavoidable prior to 2016. Vacancy rates will peak and likely cause dropping rental rates and increasing concessions. Concessions are a specific kind of rental rate reduction and from this point forth implicitly implied in the any terms regarding rental rates. Although, sensitivity tests are run for renter tenure rates and apartment capture ratios, modeling rental rates is beyond the parameters of this study.

In conclusion, the overall findings show a bubble that is currently in its boom phase and likely to cycle into a bust phase well before 2016. Economically suppressed demographics are likely to increase demand for rental housing as the economy improves. Additionally, stricter mortgage underwriting will suppress new individual home ownership and reinforce the already strong demand for rental housing. Investors will purchase residential investment properties to rent and then sell later.

# Chapter 1: Introduction

**Chapter Structural Outline**

- **A. Problem Statement and Thesis Question**
- **B. Thesis Research Scope & Structure**
- **C. Research Methodology**
- **D. Findings**
- **E. Intended Audience**

## A. Problem Statement and Thesis Question

The Seattle apartment market is currently experiencing the second largest construction boom on record dating back to 1960. The commercial real estate industry has always been well known for having distinct market cycles.[1] There is speculation that Seattle's apartment market will become oversaturated with new apartment supply, causing a drop in rental rates and poorer than anticipated return for investor. In addition, it is also well known that real estate development requires financial support from many differing investors and financial markets for each individual project. Systemic changes in behavior patterns of financial markets impact all investment classes in some way and the current apartment market is not an exception. It is now typical that many financial markets follow a boom-bust cycle, creating a bubble effect.[2] Real estate is well known to follow this type of cycle. Academic research has recently shown that financial markets are experiencing increased levels of volatility in the last decade.[3] "The increased volatility of international capital flows implies that asset prices will also display a higher volatility. The IMF (2003) finds evidence that equity price volatility has increased since the mid-1990s over and above the well-known crisis episodes in the four global major financial centers Germany, Japan, the U.K. and the U.S.A."[4] In addition, other research has shown that real estate markets have a self-reinforcing momentum and backlash, like a boil of jelly.[5] Assuming this apartment boom is a typical financially induced bubble, then the question becomes, "How big is the misalignment of supply to demand and when will it become apparent?"

From a market analyst's perspective, the answer to these questions is found in an assessment of the alignment between supply and demand. A market analyst looking at Seattle's apartment market boom may be skeptical of optimistic investment conclusions and question fundamental forecast assumptions, like high future demand and a balanced supply volume interpretation.

Possible misalignment of demand to supply could cause several unwanted negative results for investors, such as by low occupancy rates and decreasing rental rates. The resulting lower returns from reduced cash-flows for all investors in this relatively illiquid investment class could likely increase the volatility of the boom well beyond fundamentals.[6] The resulting lower returns may stigmatize apartments, residential investments, and possibly other real estate investment classes by association. This development risk can be avoided and necessitates the assessment of the alignment between demand and supply in the Seattle apartment market bubble. This alignment assessment of fundamentals can be done through a market analysis and net absorption model. Gap analysis of the alignment that this thesis research will do answers the question; "Does the demand for apartments support the current historically significant rate of apartment construction and ongoing development pipeline?" The thesis hypothesizes is that the fundamental demand does not support the high forecast rate of apartment market development by the end of the currently planned development cycle in 2016.

### B. Thesis Research Scope and Structure

Thesis research is an "opportunity to pursue some area of interest to a level of depth, completeness and conclusiveness."[7] This opportunity allows for the assessment of Seattle's apartment market and to create an example of a previously private analysis technique for the public realm. Although, it is common practice among private sector analysts to create a historic NAM, this technique is not used to forecast by any sources, academic or professional. This is be one of the only net absorption forecasts in academic literature, public record, and possibly even private professional industry (i.e., when applied to forecasting movements of a real estate submarket).

The thesis research scope is to assess the Seattle area's current apartment development cycle (2011-2016), focusing on the alignment between demand and supply. The technique proposed is a modified market analysis and net absorption model (NAM). The NAM must be modified from what is typically done by analysts, in the way that it assesses the entire market, instead of a specific property. This assessment is limited to a niche of the apartment market defined as being more than 20 units per building and at market rental rates. It is also be targeting a specific geographic submarket in the center of Seattle. These targeted apartments make up a small niche within the larger residential and rental markets, which may behave independent of those markets.

For this reason, this analysis must go beyond inferred trends analysis and deeper into fundamental driver analysis for this apartment analysis.

The organization of this thesis starts with a comprehensive literature review of a variety of relevant issues, including market analysis methodology, demographic drivers and economic indicators, supply of apartment stock, general apartment market history and capture ratio methodology. The gaps in the literature forced a broader search of topics and a longer bibliography than ideally desired. Please see the bibliography for a full list of related literature, as many will not be cited directly. The next portion of this thesis is a market analysis. The analysis starts with an introduction and market context, which gives some general background and context. It then continues with the collection and analysis of demand and supply data in the Metropolitan Statistical Area (MSA) and a geographically delineated portion in the center of the City of Seattle. Then, the analysis shifts to the Net Absorption Model (NAM) and begins to cross-reference all the previous data. The NAM analyzes the drivers and historic trends, and builds a forecast from thesis data. The forecast includes some sensitivity testing for high and low scenarios. The thesis finishes with a conclusion chapter, which contextualizes the results from the NAM and issues a few precautionary words for how to mitigate the effects of the identified boom-and-bust cycle.

## C. Research Methodology

The research methodology implements a market analysis technique with a net absorption model (NAM) and NAM forecast. It will focus on the alignment between demand and supply of the apartment market over a specific time period and place. This methodology has several parts and complicated techniques, while trying to determine the alignment between demand and supply.

The subject of this research can be described in three parts: *where, when,* and *what*. The center of the City of Seattle is called Seattle King Central Area (SKCA) and is the subject area *where* the focus of the research will be. The time period between 2011 and 2016 is *when* the focus of the research will be. Although this is the time period being focused on for the forecast, there will be considerable historic data to set trends and standards going back to 1998, if not further. Only buildings of more than 20 units per building, at market rates (not subsidies), rental (not condos), and professionally managed are *what* the focus of the research will be. All of these parameters

define the focus of this thesis research and will be described in greater detail throughout the market analysis.

Market analysis is a technique typically used by private sector analysts early in the real estate development process. The purpose is to assess the proposed project's feasibility in a specific market or submarket, identify any challenging indicators for mitigation and assess market risk. A residential market analysis typically consists of 4-6 components, depending on perspective. Although different sources typically disagree on exactly how they organize a market analysis, they do generally agree on its content. Typically, the first component is market context, which is background information and has several subcomponents like geography, location attributes, market boundary delineations, physical attributes, legal, political, economy, tenant profile, etc. Because there are so many subcomponents, organization is typically the point of contention as to whether this should be split into one, two or three components. Not all of these subcomponents will be used in this research methodology since it does not have a specific property to analyze, but rather an entire submarket within a larger MSA market. For instance, gravity modeling, marketability testing, and tenant profiling are all techniques that are not applicable in this situation. This model will incorporate all the applicable subcomponents into one market context chapter.

The next two components of a traditional market analysis are the demand and then supply assessments. The demand assessment will follow a demographic NAM that is modified to focus more on the recent shift in renter tenure rates and apartment capture ratios than other factors, like household size. Renter tenure is not traditionally cited as demographically important because it has not changed drastically since the Great Depression, but the 2008 Global Financial Crisis has become the leading driver for rental demand. Since foreclosure-driven renter tenure rate change, from owning to renting, is now a prominent demand driver and has correlated perfectly with housing tenure change in recent years, it will be more closely examined and incorporated into the model, which builds on peer-reviewed literature and is supported in detail in the analysis.[8] Historic supply and recent development rates will create the apartment capture ratios at the Seattle Metropolitan Statistical Area (SMSA) and Seattle King Central Area (SKCA). This data will also help to determine if the recent rates are higher or lower relative to the historic average of the total stock.

The most critical component of the market analysis is the equilibrium analysis between the previous two components: demand data, and supply data. "Compare existing and potential demand with current and anticipated competitive supply to determine marginal demand," which is where the Net Absorption Model (NAM) forecast takes a prominent role.[9] The model will incorporate historic net absorption data to determine critical thresholds, like the total occupied unit volatility, and the threshold point for market vacancy. Statistical data points like these will help to guide the forecast. The methodology of the NAM will be discussed in greater detail in the methodology section.

### D. Findings

The findings are many and distinctly independent, between surprising findings in the literature review and the results from the thesis NAM research. The literature review findings are surprising partially in correcting misconceptions and in clarifying the limitations of current knowledge on the subject of apartments. The NAM research builds on the accumulation of many sources of data to demonstrate current trends and define likely limitations throughout the model. Housing tenure rate shifts and apartment capture ratios at various geographic levels illustrate any misalignment between demand and supply and the likely timing of impacts to vacancy rates, rental rates, and ultimately investor returns.

The literature review uncovers several pertinent points to this thesis research that would structure many of the assumptions made later in the NAM. The first is, the concept of a bubble is well defined and is a foregone conclusion when financial markets are as heavily involved as they are with real estate. Second, there are different ways to do a market analysis. They are typically described as either inferred or fundamental. Some go further to make a distinction in the variety of levels of difficulty by categorizing them starting with the easiest (A) and continuing to more difficult (B, C, D, etc.). Third, there are three different demand drivers for apartment markets: demography, employment and income. However, some sources use more or fewer drivers. For instance, demographic drivers are powerful, but rely on a strong economy. In addition, new employment is correlated to the defined target apartment market for various reasons that may be assessed later. Finally, that income is associated with a skewing of demand across the spectrum of available rental housing. For instance, income inequity promotes higher demand for lower-end (affordable) rentals, but lower demand for higher-end apartments, and *visa verse*. Real Income (inflation adjusted) has been slowly decreasing since the 1960's and income inequity is at the

highest rate since the Great Depression. Last of all discoveries in the literature review is that the relative volume of apartments supply, both nationally and in the SKCA, is at a historic low percentage of all housing. In particular, the total supply of apartments is significantly low as a percentage of total population. Recent increases in financial market volatility may be partially responsible for both the historic low rate of building stock before 2010 and the historic high level of construction currently underway.

The thesis research (market analysis and NAM) combine many data points to define the alignment between demand and supply and the timing of changes in this alignment. The total tenure shift towards renting will likely be a gross increase of approximately 45,000 households in the Seattle Metropolitan Statistical Area (SMSA) between 2011 and 2016. The long-term average is 6,400 per year, which equates to 32,000 in 5 years. This context creates a demand for an addition 12,000 renters net. The rate of change towards renting is slowing and will reach its peak in 2013. Housing tenure will no longer be the primary driver for the apartment market by 2014.

The second portion of the NAM is the apartment capture ratio (ACR) measured at the market level and at the submarket level. ACR is the portion of the residential market that apartment living households occupy and there are a few methods to measure it. At the market level, the SMSA ACR Prorata Share (PS) method indicates 45% of all renters occupying apartments and is a gage of the long-term average. The SMSA ACR Current Capture Rate (CCR) method results in 25% of all renters occupying apartments in recent years and is a gage of volatility. The ACR analysis indicates approximately 19,000 renter households of demand by 2016. There are approximately 28,000 units scheduled will be developed by 2016. At the submarket level, the SKCA APR-CCR method results in 31% of all apartment renters in the SMSA accommodate in the SKCA submarket. The SKCA APR-PS method results in a rate of 13%. The ACR analysis suggests a relatively high rate in the submarket. This creates a net absorption demand of 6,000 household renters. The SKCA pipeline of apartment construction is projected to be 14,409 units by 2016.

The last portion of the NAM analysis is a sensitivity-testing chapter. Sensitivity testing results indicates there is a possibility of reaching the breakeven point, but this scenario would require all portions of the NAM to reach highly elevated levels for an elongated duration.

## E. Intended Audience

The audience for this thesis consists of three groups. The first group is purely academic. This thesis was prepared for academic review and submitted in partial fulfillment of the degree of Masters in Urban Design and Planning. Thus, the first audience group consists of the two-person thesis committee, the Department of Urban Design and Planning, and the University of Washington Graduate School, respectively. The second group is private sector commercial real estate in general and specifically investors in Seattle's apartment market, but it could be broader. The perspective and terminology of this thesis is rooted in that of this second group. The third group encompasses anyone with an interest in the subject of the Seattle apartment market, apartment market investment, apartment development, the entire residential rental markets, real estate, demographics, economics, foreclosure or employment impacts on rental housing, and applied modeling. For example, this group includes future students looking for literature or data sources on these topics. This thesis fits into a publically available field of literature where there is little else on this subject. Therefore, fitting this thesis into the field is easy, but benchmarking this thesis to other literature in the field is difficult, due to the lack of comparable research.

# Chapter 2: Literature Review

**Chapter Structural Outline**

- **A. Introduction to Literature Review**
- **B. Methodology Literature**
  - **I. Market Analysis Methodology**
  - **II. Housing Tenure Methodology**
  - **III. Capture Ratio Methodology**
- **C. Demographic Demand Drivers of Apartment Demand**
  - **I. Housing Tenure Demographic Literature**
  - **II. Household**
  - **III. Cohort**
- **D. The History and Trends of Apartment Market Supply**

## A. Introduction to Literature Review

This literature review is focused on market analysis, apartment markets, fundamental demographic demand analysis and inferential supply trend analysis. The challenge is that there are few detailed sources of academic literature on any of these topics in the context of market rate apartments due to the majority of this type of research being done by private sector analysts. For a full list of literature found, academic or otherwise, please see the bibliography and endnotes. Although, some of these sources are not directly cited, they are relevant to the general subject matter of this thesis.

After assessing all sources that are available, the literature can be organized into three categories: methodology, demand and supply. There are few academic textbooks on the methodology that are detailed enough to be useful. The majority of what is in the bibliography is on demographic demand drivers, but are dated and, thus, not insightful to the current apartment boom. There is little literature on the supply side, because the residential market is ownership oriented and ignores rental properties. The apartment perspective is one of an ignored class of real estate, with little research having been done and little interest from anyone in doing it. These symptoms are illustrative of a gap in the literature and show an opportunity for academics to publish, as well as an opening in the field for this thesis.

As a side note, most academic literature comes from one or two authors working on a research subject. The end result is a piece of work that is deeply focused on one subject, but not broad. In comparison, there are other pieces of literature written, by groups, that do offer a more comprehensive view of a general subject of housing markets. For instance, Harvard's Joint

Center for Housing Studies (JCHS) has approximately a dozen authors that release multiple annual and semi-annual quasi-academic articles that give the most comprehensive view of all the sources of literature discovered in this search. Although the JCHS authors are academics (or academic in nature) and their work appears to be of a very high caliber, the nature of the work is more a reporting of current facts and short-term trends, than of probing academic review of an issue. The end result is that their work neither fits into a strict definition of academic literature review, nor is it appropriate in later sections. However, their work does merit brief discussion as a prelude to the rest of the academic literature review of this thesis. They produce two reports of relevance to rental apartment markets: the annual State of the Nation's Housing (SNH) and America's Rental Housing (ARH). The SNH is an annual publication that has been produced for at least a decade. The SNH abstract shows a wide breadth of concepts being integrated across housing tenure and property types, but is somewhat confined to its own branding parameters. For instance, the 2011 abstract demonstrates by stating:

> "With employment growth strengthening, consumer spending up, and rental markets tightening, some of the ingredients for a housing recovery were taking shape in early 2011. Yet in the first quarter of the year, new home sales plumbed record lows, existing sales remained in a slump, and home prices slid. Tight underwriting requirements, on top of uncertainty about the direction of home prices, continue to dampen home buying activity. The weakness of demand is slowing the absorption of vacant properties for sale, hindering the recovery."[10]

As a result, the JCHS also released special reports on housing issues of contemporary importance that do not fit into the normal brand parameters. Given the 2008 Global Financial Crisis and current focus on the rental markets, the JCHS decided to create and released the ARH as a special report in 2011. In comparison to the SNH, the ARH abstract focuses on rental markets by saying:

> "The troubled homeowner market, along with demographic shifts, has highlighted the vital role that the rental sector plays in providing affordable homes on flexible terms. But while rental housing is the home of choice for a diverse cross-section of Americans, it is also the home of necessity for millions of low-income households."[11]

The comparison illustrates the contemporary need to focus on apartment and rental tenure in a way that has not previously been done.

## B. Methodology Literature

### I. Market Analysis Methodology

This thesis uses a market analysis methodology with a focus on a net absorption model (NAM). Market analysis is typically a technique applied by demographers specializing in commercial real estate (CRE) feasibility and appraisal valuation, before investment or development. Feasibility analysis has been called the father of appraisal, showing a hierarchy of levels of analysis.[12] A "market analysis is concerned with the reduction of aggregate data, such as population, employment and income to factors which are relevant to the site, the merchandising target or the client."[13] Market analysis is typically forgone by non-commercial or smaller properties because it is often too expensive or difficult to perform. This literature review will analyze several sources on the subject of market analysis and related technical methodology. Although most market analysis reports have a National Apartment Report (NAR), this thesis will not and defers to the publically available reports.[14] Cumulatively, these sources show a burgeoning method that has consensus about its general parts, but not its specifics or how they are organized. In addition, it is important to keep in mind that many of these sources are from the perspective of a specific site, where this thesis is focused on most of the Seattle areas apartment market. The methodology will be slightly modified to meet this geographic distinction.

Of all the sources, the most descriptive was Fanning's *Market Analysis for Real Estate*.[15] This text provides the widest scope and the greatest depth on the process and technical methodology. Fanning immediately makes the distinction between "inferred" analysis of basic data trends in the market, like vacancy and rental rates; and "fundamental" analysis, which is based on demographics, economics and other demand drivers. He even goes so far as to break it into four levels (A through D). Level A and B focus on inferred data analysis. Level C is a typical fundamental analysis of a market, which is closest to what is being done in this thesis. He also includes a fourth category, D, that supplements a typical fundamental analysis (C) with any other type of data that may be appropriate, like "land use policy, public and private fiscal capability, probability weighting of use projections, and risk rating." (p.24).[16] Within the demand chapter this text offers a six part description of the analysis: (1) attributes of subject property; (2) delineate the market; (3) forecast demand; (4) measure supply; (5) analyze market equilibrium; (6) forecast capture of subject property. Although the first and last of these are not pertinent or

need to be modified, the rest require some adjustment and, thus, this text goes into some detail regarding how to implement a quantitative analysis in this context. This is the only text to demonstrate the implementation of models. Fanning's text is the most similar to the methodology used in this thesis, has the most detailed descriptions and examples, and is the most professionally orientated of all the texts.

The lecture slides from Professor Christopher Bitter have a scope comparable to most of the text books reviewed, with a strong focus on demographic demand. The demand portion focuses on demographic drivers, with an assumption of economic fundamentals driving those demographics. These demographics are then used to develop a NAM for a residential market area. This thesis will follow a methodology very similar to that of Professor Bitter's lecture.

The Parli textbook is simpler than the method used in this thesis, although it does touch upon fundamental analysis in the abstract.[17] He offers a six-part process: (1) property productivity analysis; (2) specification of the market of most probable property users; (3) demand analysis and forecast; (4) competitive supply analysis and forecast; (5) demand and supply study or equilibrium analysis; and (6) capture analysis. Like Fanning's, the first part of Parli's textbook is not applicable given the locational attributes of this thesis. Notably, the last part of his analysis needs to be modified to apply to a submarket. Parli states that on the demand side a "trend analysis" is sufficient in stable conditions and that supplemental "fundamental analysis" is only needed in unstable conditions. Parli's trend analysis only includes occupancy and rental rate trends. The Seattle apartment market is considered stable by Parli's definition, with high occupancy and rental rates. However, recent economic upheaval has destabilized all markets and necessitates that Parli's definition be adjusted. Parli only gives a theoretical description of fundamental analysis techniques. Although this text does touch on many issues, it does not have enough depth to complete a fundamental market analysis like the one this thesis will model.

The last source is an anonymous local consulting company, who presented their market analysis in a presentation in 2010. This source is included to show a current industry professional using a similar technique to the market analysis performed in support of this thesis. This presentation demonstrates many of the same individual parts mentioned by the other sources (discussed immediately above), but the parts are not organized or weighted in the same way. This

presentation also shows a perspective oriented to ownership market in its data presentation and limited demographic data. This partial view of available market data exemplifies the typical low level of quality of analysis throughout the industry. It, then, concludes with a "Rent Rate Growth Forecast" section, but it is difficult to say how this conclusion was reached due to little explicit analysis being shown.

Although there were several other sources found that had something to say about market analysis, they had very little to contribute in specific detail or beyond the above-discussed sources. Some were vague, some were functionally obsolete, and some were simply too old (dating as far back as the turn of the last century). These sources include Brett; Carn; DiPasquale; Isard; Milgrim; McMichael; Namavati; Richardson; Ring; Spilker; and Thrall.

Based on the collective knowledge of all the textbooks and other sources reviewed, the standard approach appears to be an "inferred" analysis of market trends and then extrapolate them into a forecast. If academic literature is any indication, then "fundamental" analysis appears to be rarely implemented by anyone. When it is implemented, it is done by demographers specializing in commercial real estate. Market analysis appears to have several acceptable ways of being done, but no agreement on the specifics.

## II. Housing Tenure Methodology

Housing tenure is the relative rate of owners to renter, with or without vacancy. Housing tenure methodology is conceptualized differently depending on the disciplinary perspective. Demographers typically use census bureau data sources, like the decennial census or other surveys to keep a historic count. For development demand forecasting purposes either it is suggested to use this type of demographic data to determine historic statistical norms and extrapolate them, or look at zoning potential assuming there is a limitation somewhere that should be avoided.[18] Economists take a very different perspective by "identifying the breakeven point" at "financial tradeoffs between renting versus owning" by analyzing systemic changes as the indicator of housing tenure performance.[19] For instance, they may identify variables like mortgage term changes in interest rates, home appreciation rates, tax deduction benefits, loan origination rates, property tax rates, FHA supported loan to value requirement, cash on hand

benefits, bank cash requirement incentives, mortgage insurance minimum requirements, etc. This may all be taking into account from an opportunity cost comparison method.

### III. Capture Ratio Methodology

"The capture rate is the percentage of likely consumers that would need to be attracted to the proposed development to reach stabilized occupancy."[20] Fanning's 2005 text offers the most comprehensive description of capture ratio methodology. This text offers three types: "Current Capture Rate" (CCR), "Prorata Share" (Prorata) and "Competitive Rating" (CR). The first two are based on different methods of assessing the supply, while the last is a subjective rating system. The "current capture rate" method uses the difference between the subject occupied units and the market competitors occupied units. The "Prorata Share" uses the current percentage of the total stock. In contrast, the "rating system" is based on a complicated subjective rating system and should only be used in the event of an intangible that could greatly change the capture rate. These methods should produce similar results, but do have limitations of when they can be applied. Fanning describes the primary limitation as the stability of the market and this will be a factor under the current economic circumstances.

## C. Demographic Demand Drivers of the Apartment Market

The following section on demographic demand drivers will focus on only a limited number of subjects despite the existence of a large range of topics within demography. The primary focus is on *renter tenure,* and the secondary focus is on *apartment capture ratios* by market and submarket. There will also be some discussion of *household's* and *cohort* movement, but this will only be a tertiary concern. This kind of traditional demographic literature is discussed as a matter of due diligence, despite it not being apropos to contemporary demographic changes. The reason *renter tenure* is the main focus of this review is that the current foreclosure phenomenon's impact is manifested in *renter tenure* and there is almost no literature on this new subject.[21] The more contemporary demographic issues related to foreclosure information will be discussed later in the market analysis.

### I. Housing Tenure Demographic Literature

Housing Tenure refers to the financial arrangements in which someone obtains the ability to live in a residence. Broadly speaking tenure typically distinguishes between a choice to own versus rent. For demographic purposes, tenure is often thought of in terms of the ratio of owners to

renters (i.e., owners/renters) with an ownership-oriented perspective or bias. Traditionally the trend of this demographic ratio follows a theory of "housing-tenure progression"[22] or "life-cycle."[23] The housing-tenure progression is straight forward using a conceptual ladder with certain life events pushing individuals up or down the ladder, like a raise in pay or being laid off from a job. The life-cycle concept is more traditional in its demographic structure, conceptualizing on Census data points like age, marital status and existence of children. Again, these events are seen to be highly correlated with a progression called "stages" through life and typically towards home-ownership. Some see housing tenure as a series of choices from the individual perspective.[24] Consistently, a common theme in all theories is a general direction and desire to own the real estate in which one lives.[25] Although demographics and housing have only been paired as an academic study in recent decades, there seems to be good consensus on the issue of housing tenure under positive economic circumstances.[26] The only limitation is that the current literature has a micro-tenure perspective dealing with an individual's issues or decisions on his/her immediate situation. Demographers tend to omit the macro-tenure perspective, which, in the active foreclosure environment following the Global financial Crisis, is shifting the entire market. This is likely due to the fact that this kind of macro level phenomena rarely happens, with the Great Depression, the New Deal, and the 1990's policy changes being the only concrete examples. As a result of this rarity, academics have produced and published very little academic work on the macro level perspective of this subject.

## II. Households

A "household" is defined as one or more people cohabitating in one housing unit. The academic literature has taken a particular interest in the average household size in recent years. There is a plethora of articles discussing every aspect of this issue in demographic terms. Despite extensive dissection of household data and some unsubstantiated theories suggesting a pending large decrease in the rate, the bottom line is that the rate was decreasing between 1950 and 1980, and has substantially plateaued over the last 30 years. There are too many authors publishing on this subject to be worth identifying, given the lack of significance to the bottom line. A list of sources is as follows: Belsky; Jiang & O'Neil, Masnick; Masnick, McCue & Belsky; Masnick, Will & Baker; Myers & Pitken; Myers & Ryu; Nelson; Riche; and Pitken & Myers.

### III. Cohorts

Cohorts are groups of individuals with a common trait like age, nationality, etc. The most common demographic cohorts discussed in the literature are the Baby-Boomers, Gen-Y, and Immigrants. Although these groups have a large impact on housing markets in a healthy economy, they have shown paralysis under current recessionary and/or stagnant conditions.[27] Recently, analysts have indicated that regardless of where the Baby-Boomers go, we know they will eventually leave their large detached SFH in the suburbs, and someone will need to buy their homes at a reasonable price. The problem is that there has not been a subsequent generation or demographic group to buy the Baby Boomers' homes since 2007 and even today, the SFH market is not what it was before the crash. . "Gen Y" is still the most likely to have an impact on the apartment boom in the long-term as the economy improves, but will be delayed initially for several.[28] Meanwhile, immigration in the current economy is highly unlikely, and the 2010 Census has shown a gross immigration reduction or net retraction, with the Mexican economy preforming well in 2011.[29] The national population's long term annualized growth is approximately 1%, which is not nearly enough to explain a sudden boom in development.[30] Again, the bottom line is that traditional cohort literature offers no insight or explanation that is applicable to the current boom. More detailed data about each of these cohorts, groups and issues is available **Appendix A4-1**.

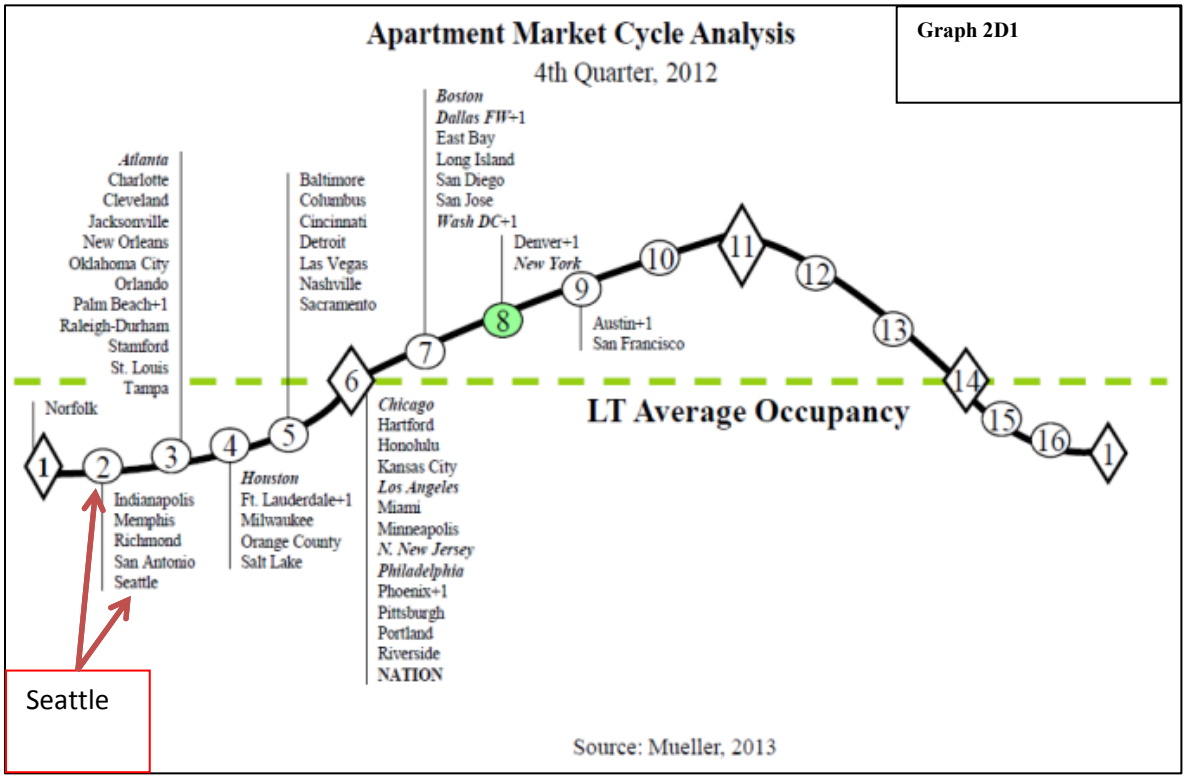
## D. The History and Trends of the Apartment Market Supply

The apartment market supply literature suffers from the same issue as the demand side: there is relatively little written about the apartment market specifically or the geographically local scale of markets in general. Although many sources of literature have been reviewed and listed in the bibliography, their combined body of knowledge is much like the old metaphor about the blind men describing different parts of an elephant based on what they touch. Aside from the forcibly broader than anticipated breadth of subject researched, the reason for the gap in rental apartment market literature appears to be that the subject itself (apartments) is the "neglected child" of American housing.[31] Anthony Downs starts the first chapter of Nicolas Retsinas book *Revisiting Rental Housing* by clearly stating several basic facts about the rental market from Census-Bureau data, which quickly sets the tone of the situation. He starts with demographic facts like, "one third of all Americans rent" implying renters are a disadvantaged minority in the U.S. economic and political systems. Then he states, "Poor households made up 25% of all renters, and in

comparison only 8.6% of owner-occupied households are poor," demonstrating that disproportionate amounts of renters are poor. He continues, "57.4% of poor households are renters," and of the corresponding "42.6% of poor households that own also accumulate more wealth." This signifies that even among the poor there is a separation of social class by wealth in relation to home-ownership. He continues to discuss similar historically based facts of renting in America for a few pages and then focuses the remaining chapters on low-income housing. Low-income housing is the focus of most other public literature sources, which unfortunately makes the scope of their topic not align with the focus of this thesis on market rate apartments. This narrow focus of most literature on the "low-income" portion of the rental housing market provides a historical explanation and exemplifies why there is a current lack of depth of literature on the topic of market-rate apartments.

It is important to get a baseline on the history and trends of the market to understand the current situation and the direction the market is going. Robert Shiller released a white paper that gives a general economic background to the housing market bubble. In this article, Shiller describes how apartment rental rates have dropped 50% in real value since 1913.[32] This contrasts dramatically from home values, which have experienced approximately 1% annualized appreciation growth in the long-term and soaring appreciation in value in the years leading up to 2007.[33] Harvard's JCHS's annual 2011 edition follows up on Shiller's topic by showing the effects on the market's owner versus renter relationship. Specifically, the JCHS's annual report showed that the home-ownership rate was at 64% in 1994, increased to peak at 69.5% in 2004, and then fell back down to 67% by 2011. It continues to drop today. This gives some perspective by benchmarking apartment market value appreciation in comparison to homeownership. This benchmark points to how financial value of returns to investors has influenced market share, but market share is only one perspective on the issue. From a larger investment perspective, the apartment market has recently been described by ULI as the strongest property type for development, cash flow returns and ROI.[34] Apartments are the only property type to have everything lined up, including "strong demographics-based tenants demand, years of underdevelopment, declining vacancies, rising rents, and plenty of available financing from government, banks and insurers."[35] The apartment market is also being described as "a little too overheated," (p.46) but this depends somewhat on the region.[36] Industry professionals surveyed "high income" apartment owners, who indicated that 40.5% would buy, 26% would hold, and 33.5% plan to sell in the coming year. This

contrasts from moderate-income apartment owners, who indicated that 54% would buy, 24.9% would hold, and 21% plan to sell this year.[37] It is well known, that the real estate industry experiences market cycles. Glen Mueller, who studies the cyclicality of real estate very closely, issues an authoritative report on the subject every quarter (Cycle Monitor).[38] The cycle report for the apartment market is shown below in **Graph 2D1**. The cycle shows Mueller's concept being applied to geographic regions, with Seattle in second position throughout 2012, indicating there is still a large amount of room for development in Mueller's opinion.




Two sources give a more comprehensive view of the rental apartment market history. The first is Myers and Pitkin's 2009 article, "*Demographic Forces and Turning Points in the American City, 1950-2040,"* which aggregates a large amount of national level trends. The other is Dupre + Scott Apartment Advisor's (D&S) *The Apartment Advisor* industry report, which is Seattle-specific and issued periodically. Although, an industry report would not normally be included in a literature review, they are being included now for a number of reasons: including the similarity of the focus to this thesis; the wider than normal breadth of the reports; and the previously mentioned lack of available academic sources in the field. Between these two sources, a national and local history is well covered and gives a clear explanation for how the apartment market has arrived at its current situation.

Myers and Pitkin separate several strings of information that, when taken together, tell the detailed narrative of the national housing market, and, specifically, the apartment market. The original source of their historic construction volume data is Robert Schafer's 1974, *The Suburbanization of Multifamily Housing,* as updated by more recent data from the US Census-Bureau 2008B (Building Permits). These sources show there was a significant slowing of apartment construction rates in the 15 years before the 2008 crash. This history of apartment construction pipeline supply data (through construction permit counts, COO counts or post construction apartment unit survey counts) gives the current boom context. To paraphrase, there was an increase in apartment construction up through the 1920s due to high levels of immigration. When immigration was restricted legally in 1924, apartment construction dropped substantially. It picked up again after WWII, hitting a high rate of 35% in the 1960s', with many new construction projects designed with multiple separated apartment unit clusters. The way that units are constructed affects the unit counts, by decreasing the number people per unit and ultimately resulting in the increase of number of "head of household" in a geographic area. In the 1970's, the apartment construction rate remained the same at 36%, as the way apartments were built began to change. New construction moved away from small clusters within a project and towards creating larger monolithic structures. This created fewer bedrooms per unit and artificially increased the rate in comparison to the true volume being produced. Then the rate of construction began to decrease slightly to 33% in the 1980's as the style of bigger larger community construction continued. Again, artificially boosting the rate by maximizing the number of one-bedroom and studio units, in comparison to traditional 2-4 bedroom units. In the 1990's the rate dropped substantially to 19%, which had not occurred since the 1930s. This may have been partially due to there being no new way to artificially boost the rates by changing or maximizing product type as had been done in previous decades. The apartment construction rate remained low until approximately 2007. At that time, construction rapidly increased to 25.7%. It is likely that construction rates will continue to rise, if non-academic reports (the only ones that are available, currently) are correct.

D&S's focus on the Seattle market, and, specifically, the same defined niche of the apartment market this thesis is analyzing. D&S have been the premiere Seattle apartment market analyst since 1981. They have the most comprehensive survey data set available. They typically focus on private sector activities of investment, development and management of 20+ unit, market rate,

rental, apartments in the SMSA. The December 2011 edition of *The Apartment Advisor* focused on the return of the apartment market and took a wider than normal historical view covering a 10-year window, including the previous 5 years and forecasting 5 years ahead. After financial markets dropped significantly in 2008, the apartment market was the first to indicate signs of strong recovery for investors. It would in fact become the strongest investment market in 2009. A problem was identified, namely, that demand was increasing at such a fast pace that the supply might be exhausted before new stock would complete construction. They continue to show that the commercial credit crunch from the recession prevented development in 2009, and developers would have to work quickly in 2010 to hit the window of opportunity in maximizing their possible return. After looking deeper into historic data, it appears that, much of the apartment stock converted into condos between 2004 and 2007. This showed specific detail of how the reduction in supply was not only a lack of new development, but also the conversion of units out of the rental market. The D&S report concludes with a forecast section that generally shows that long-term fundamental demand is strong. The report also shows the pipeline of construction permits swelling to its highest rate since the 1980's and its second highest rate on record, dating back to the 1960's.

In addition to the historically low rate of apartment construction and supply conversion to condominiums, the foreclosure market is having an impact on supply by reducing the overall stock. The Census-Bureau states that normal vacancy is approximately 3% of the total building stock in every decennial census dating back to 1900.[39] By the 2010 Decennial-Census, this vacancy rate has jumped to approximately 7% of all buildings. The additional 4% is tied up temporarily while banks push the properties through legal eviction proceedings, bankruptcy courts and short-sale auctions. The end result is a historically larger portion of the housing stock is unavailable for use for an extended period of time. This delay will last approximately one year for each property in the State of Washington, according to Seattle based law firm Lane Powell.[40] The State of Washington is a judicial foreclosure state, which means it will take less time to get through the process in comparison to other judicial states. A normal time estimate assumes normal conditions. It is likely the courts will be overwhelmed by the record high foreclosures that need to be processed; delays were expected and have been realized. For instance, in the State of Washington the minimum amount of time to process a foreclosure is 120 days and the average is 180 days. In 2012, the average was 300-400 days, with other judicial states at 400-500 days.[41]

The combined effect of the low construction rates over a long period of time and the temporary removal of a significant percentage of the housing stock leaves the total housing stock constrained in all residential markets.

The combination of these historic data points leads to the conclusion that the current historically large increase in apartment development is, at least in part, due to having a low amount of rental stock available in both the apartment market and all residential markets. Historically, the apartment market cycles are less volatile than other real estate types and much less volatile than the current cycle is experiencing. This kind of volatility is more common in other types of markets and similar to the financial markets. This irregularity suggests that the nature of the apartment market is being more heavily influenced by the well-documented increased volatility of the financial markets, and/or possibly combined with an increased presence of financial markets in apartment construction, which is less well documented.

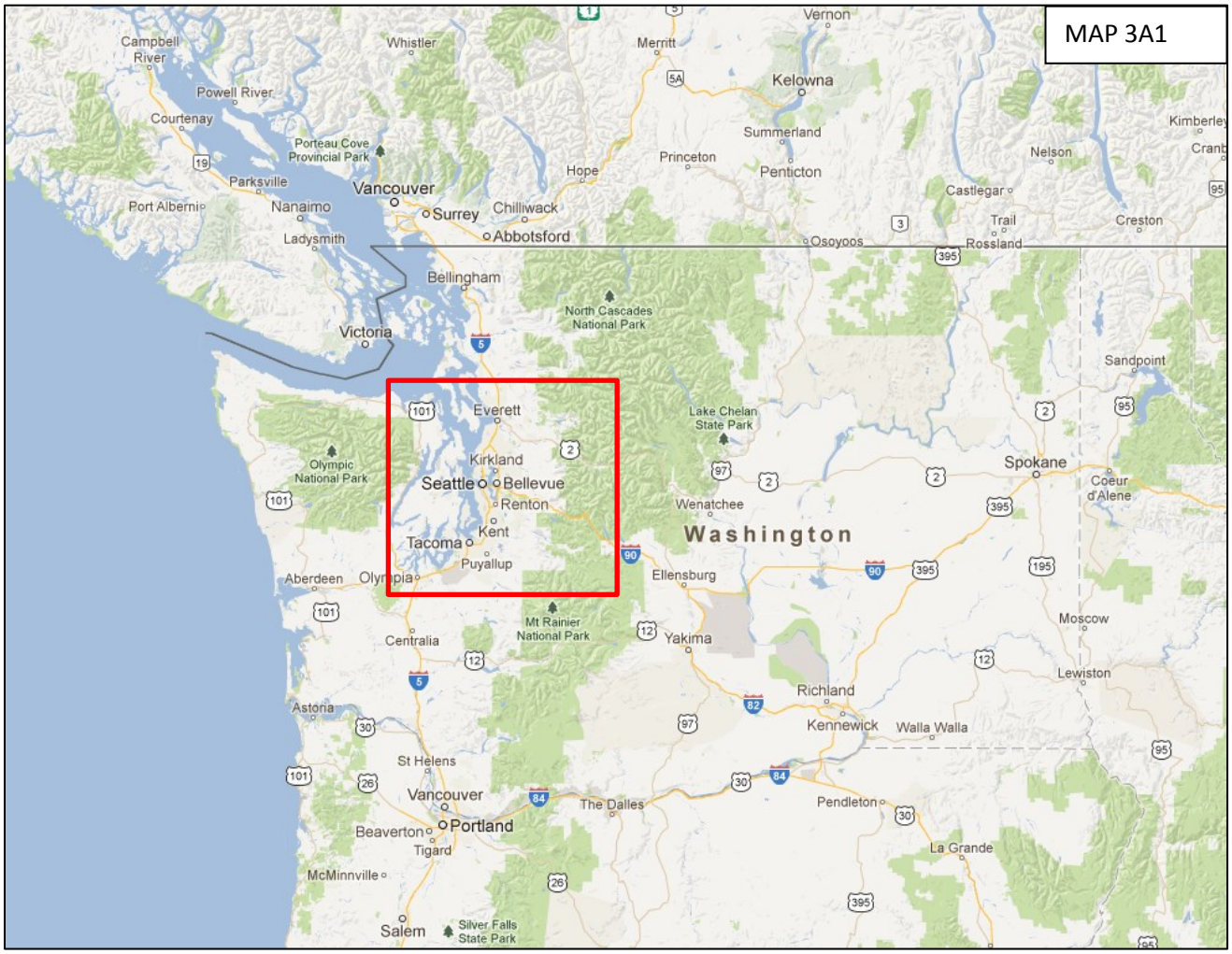
# Chapter 3: Market Context

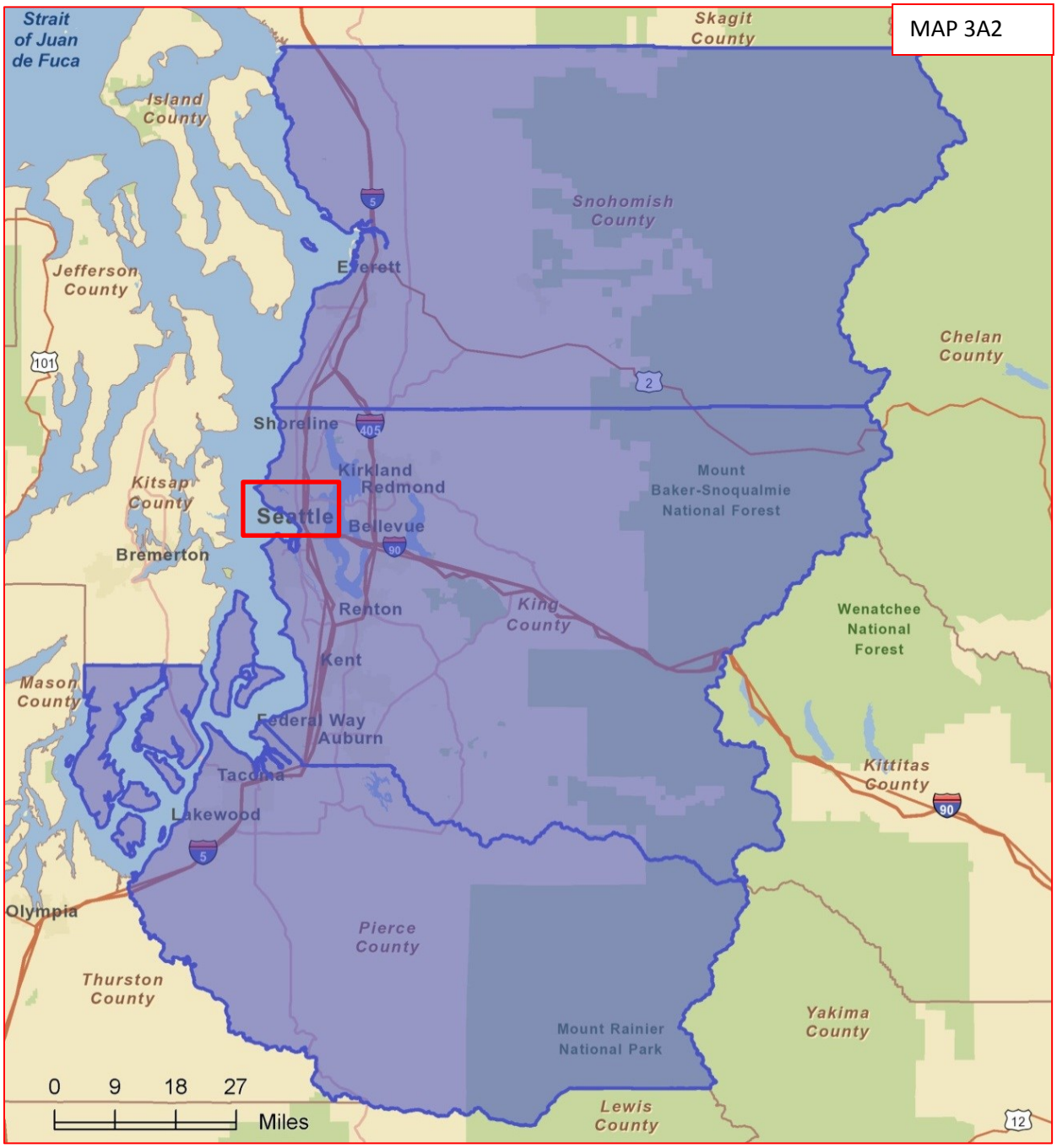
**Chapter Structural Outline**

- **A. Identifying Market Area**
- **B. Geography**
- **C. Transportation**
- **D. Politics**
- **E. Economy**
- **F. Apartment Market**

## A. Identifying Market Areas

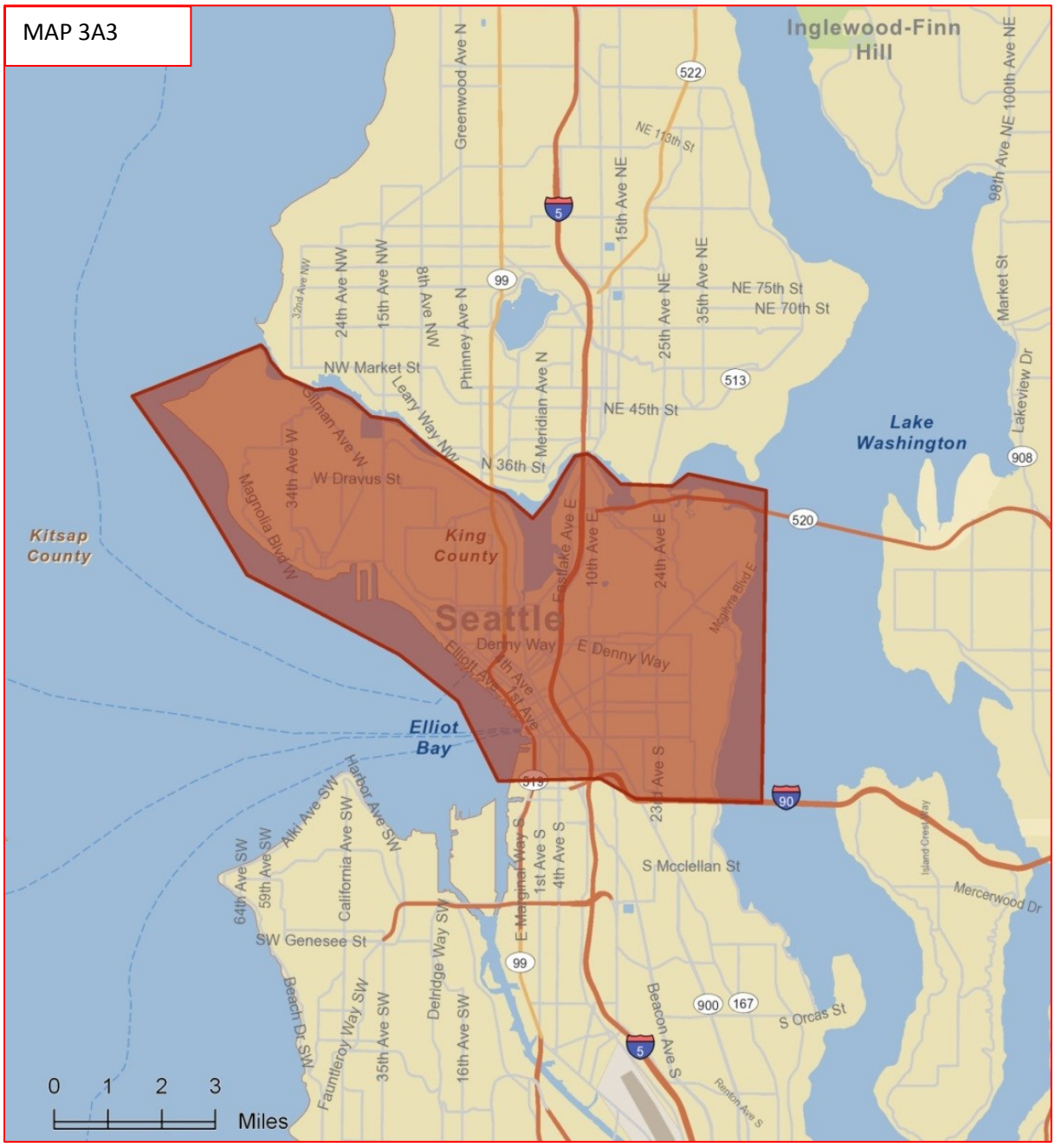
**Map 3A1** shows most of the state of Washington with Seattle area centered in the box along with most of the Tri-County area that defines the MSA. The Seattle area is between Portland, Oregon and Vancouver, B.C., Canada.






The SMSA is composed of three counties King, Pierce and Snohomish, shown in **Map 3A2**. There are two target areas that need to be geographically delineated: market and submarket. The market is the SMSA and the submarket is the SKCA. Other geographic areas will also be referenced like national, state, or county levels; but these areas will be tertiary points of reference. The final target area is the submarket within the center of the City of Seattle, known as

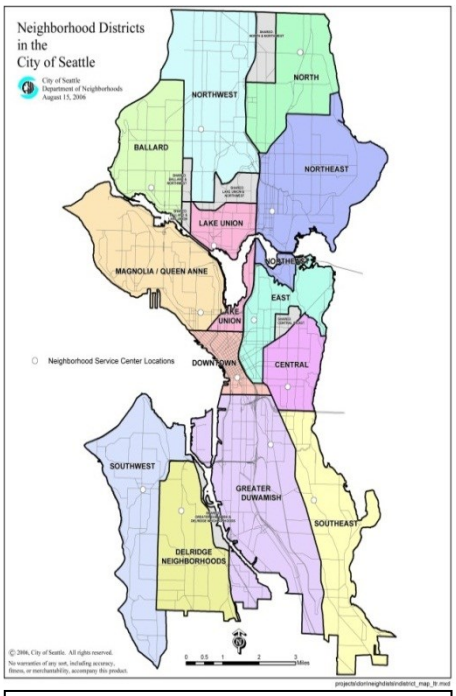
SKCA, shown in **MAP 3A3**. It is surrounded by water on three sides and by Interstate highway 90 (I-90) to the south. Additional maps are available in **Appendix A3-1**.




**MAP 3A4** illustrates the locations of forecast construction within the SKCA apartment development planned into the foreseeable future and color-coded dots represent the anticipated year of completion.


Map 3A4
New Apts by Year
2011
2012
2013
2014
2015
Lake Union
Elliot Bay
Portage Bay
Queen Anne Dr
McGraw St
W Galer St
Olympic Pl
Valley St
Mercer St
Harrison St
Denny Way
Broad St
St Helens Park
Taylor Ave N
Westlake Ave N
6th Ave N
6th Ave W
1st Ave
5th Ave N
Dexter Ave N
9th Ave N
Western Ave
Elliott Ave W
Wall St
Bell St
Blanchard St
Lenora St
Westlake Ave
Stewart St
Minor Ave
Alaskan Way
1st Ave
2nd Ave
3rd Ave
4th Ave
Pine St
Pike St
Union St
9th Ave
Hubbell Pl
Seneca St
Spring St
Madison St
Marion St
6th Ave
5th Ave
Cherry St
James St
7th Ave
2nd Avenue Ext S
5th Ave S
S Dearborn St
Broadway
Boren Ave
Swedish Hospital
12th Ave
14th Ave
E Jefferson St
E Cherry St
23rd Ave
E Yesler Way
S Jackson St
Golf Dr S
12th Ave S
23rd Ave S
Rainier Ave S
Eastlake Ave E
Boylston Ave E
Harvard Ave E
520
E Lynn St
E Boston St
10th Ave E
E Galer St
15th Ave E
E Aloha St
19th Ave E
23rd Ave E
Belmont Ave E
Bellevue Ave E
Broadway
12th Ave E
E Thomas St
E John
E Olive Way
E Pine St
E Pike St
E Union St
15th Ave
E Madison St
5
90

## B. Geography




MAP 3B

Regionally, the nearest MSA's are Vancouver, Canada to the north and Portland, Oregon to the south. At the county level, King County is by far the most populated of the three counties in the MSA. The City of Seattle has several other cities around it within the SMSA. To the north is the City of Everett, which is much smaller population and economy. To the east is Bellevue, which has sprung up quickly in the last 30 years from farmlands to become Seattle's closest economic competitor, but does not yet compete in population size or density. To the south is Tacoma, which is Seattle's historic competitor. Tacoma fell behind many decades ago and is currently much smaller in both population and economic growth. The natural water body bordering to the west is the Puget Sound, connecting to the Pacific. The natural border to the east is the Cascade mountain range, which runs north into Canada and south connecting to the Rocky Mountains. The SMSA is primarily on a north-south axis due to challenging topographic limitations, as illustrated in **Appendix A3-2**.[42]

Within the City of Seattle, there are many neighborhoods. **MAP 3B** illustrates the Seattle macro-neighborhood overlay. Within these macro-neighborhoods there are between 30 to 40 neighborhoods total, depending on the source.[43] This multilevel perspective provides insight to the segmented nature of the local culture. The SKCA area consists of 12 or more micro-neighborhoods listed in **Table 3B**.

**Table 3B**

| | | |
|---|---|---|
| • Downtown Seattle | • Southlake Union | • First Hill |
| • Belltown | • Eastlake Union | • Madison Park |
| • Queen Anne | • Westlake Union | • Central |
| • Magnolia | • Capitol Hill | • Leschi |

## C. Transportation


MAP 3C1

The primary mode of transportation, by funding, is cars and roads, followed distantly by other forms of transportation, like busses, trains, bikes, and walking. The largest highway in the system is I-5 running north/south, from Canada to Mexico. The second largest is I-90, which runs east/west, from Seattle to the Atlantic Ocean in Boston. The third and final federally funded highway is I-405, which is a bypass system around Seattle, diverting traffic off of I-5 in Renton and Lynnwood. I-405 circles around Lake Washington, the largest inland water-body of the area. Seattle traffic has ranked in the top 10 most congested cities in the nation for the past decade and has the highest single occupancy vehicle (SOV) count.[44] The Port of Seattle ships the majority of its cargo on these same roads via 18 wheel semi-trucks and a minority through an aging heavy rail system owned by BNSF.

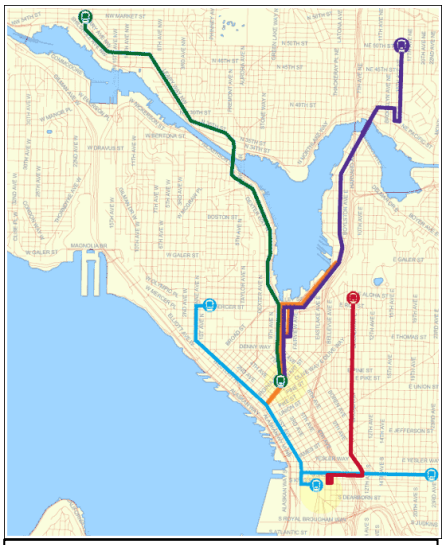
Although public transit is only a small part of the biannual budget, there are several different agencies and types, which make Seattle's public transit unnecessarily confusing. The first type is Amtrak, which leases space/time from BNSF to run the "Cascade" train (heavy rail) from Vancouver, Canada to Eugene, Oregon; and a few train south to California.[45] Maps of Amtrak routes are available in **Appendix A3-2**. The second type is a regional commuter rail service running on the same leased tracks through Sound Transit's "Sounder" (heavy rail). Sound Transit is a regional transit service and is also responsible for the "Link" (light rail), which runs on a partially designated right of way, north/south, from the airport to the center of Seattle, as shown in **MAP 3C1**. It is currently expanding construction north with plans to reach


MAP 3C2

Lynnwood by 2024. There is also the "South Lake Union Streetcar" (light rail), which runs from the north edge of downtown to South Lake Union, as shown in **MAP 3C2**. [46]

The Seattle area also has an extensive "spoke-and-hub" bussing system run by King County. A full map of the SMSA bus routes is available in **Appendix A3-3**. King County's Metro Transit service has a contentious and long standing agreement to fund this system by a split of 40%-40%-20% between the west side of Lake Washington, the east side of Lake Washington, and the City of Seattle, respectively. This agreement was rumored to change in 2011 by policy wonks.[47] Additionally, there is a strict limitation on the number of taxis in the area, which ultimately increases traffic congestion and requires more parking.[48] All in all, mass transit is currently a small part of the transit system in comparison to the extensive highway, bridge and secondary road infrastructure.

For the first time in 100 years, Seattle's history public transit is expanding. The Link light rail is currently in the middle of constructing Phase II, which has secured public financing. This may increase property taxes in the long run but also decreases congestion and the need for additional parking. They are currently planning Phase III, but this may be stalled due to rumors of Phase II budget overruns. The City of Seattle is also pushing hard to start multiple streetcar lines. The First Hill Street car has already been approved for public funding as part of the Yesler Terrace development project and is already under construction. This line is shown in Red. There are also several other plans to install streetcars that seem to be gaining some traction, as illustrated by all the other lines in **MAP 3C3**, except red.[49] Even the bus system is undergoing a makeover, due to budgetary contractions. Both the City of Seattle and King County Metro have agreed to remove the "Free Ride Zone" from the downtown and are adopting the international standard of "pay as you enter", which is much less confusing than the old system. The King Co. Metro map illustrates the vast reach of the old bus lines, expanding to the rural countryside, which has recently been cut back.



MAP 3C3

## D. Politics

Politically, the area can be described as having a "bottom up" approach; either in reference to the grass roots political power at the local level or in regards to the lack of organized political leadership at the higher state level. The political challenge is rooted in local cultural norms, typically described with adjectives such as passive aggressive, crank, curmudgeon or NIMBY'ist. In addition, changes to regulations occur often and differ based on location. The City of Seattle's Department of Planning and Development (DPD) does have an extensive website and an email list service to notify of any changes or updates. Between a politically over-active culture and a changing regulatory framework, developers were overwhelmed at first. A complicated but equitable entitlement process is now in place to ensure that all issues are addressed with reasonable assurance of risk mitigation for developers. [50]

Development entitlement is considered to be more complicated in Seattle than the national average, partially due to the length of the process. Once the entitlement process is complete, the building permits are issued and good for 2-3 years (normally). Building permits were extended in 2010 due to the financial system collapse and sluggish recovery from the Global Financial Crisis. For example, the most recent change in development regulations recently loosened the normal 2-year entitlement protection, extending it repeatedly, based on appeal. The City of Seattle has made some efforts to incentivize development by expediting the otherwise lengthy entitlement process for any developer who is building to LEED Silver standards or better. They have also offered a considerable residential height bonus on any new mixed-use development.

## E. Economy

The topic of the economy can be split into national and local levels. Although most of this section will discuss the local level, the national level must be briefly discussed for due diligence. A national economic market analysis is relevant to the SMSA. For instance, events occurring with multinational corporations like Microsoft or Boeing will have direct ramifications in the Seattle area. In addition, globalization effects to commercial banking, secondary investment and credit markets will also have significant impacts to local markets in general terms and specifically apartment market development. More on changes in national economic market activity is available in **Appendix A3-4**.

This section will focus on local events. The City of Seattle has a fairly well diversified economy across a wide variety of business sectors. Traditionally, the largest employers in the region

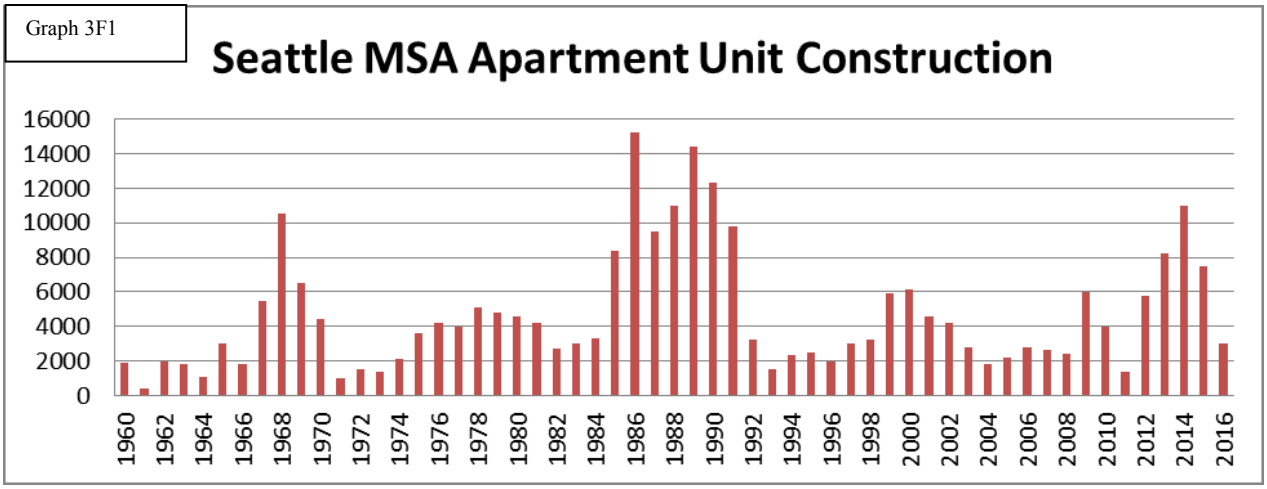
surrounded the City of Seattle: Microsoft, Boeing and Costco. Growing from these roots, Seattle is a burgeoning high tech hub, attracting the likes of Google, Facebook, Adobe, Nintendo and X-box. Microsoft is also relocating and increased their space in central city locations in the last decade. Moreover, one cannot talk about tech and Seattle without mentioning the newly minted shining star: Amazon.com, who recently purchased an entire block and plans on building three skyscrapers.[51] There is some emerging activity in the biotech and medical research space in South Lake Union with Fred Hutch, Path, ZymoGenetics, UW Medical, and the Gates Foundation. There is also a very slowly recovering banking sector in the Central Business District (CBD). After the collapse of WAMU, Chase Bank increased its presence in the area and Russell Investments moved into WAMU's old building, the Columbia Tower.

Seattle had 1.75 million jobs in 2011 and rebounding toward its peak of 1.85 million jobs at the beginning of 2008.[52] Unemployment rates is dropping slowly but steadily and staying below 9%, with first time applicants being below 150,000 year-on-year for several months in a row. Employment and unemployment figures clearly do not move in parallel, with employment being a gross metric and unemployment is a net metric. The economic recovery is anticipated to be slow with an increase in employment to 1.88 million jobs by 2015. GDP in the SMSA shows growth of approximately 2.6% since the trough in 2008-2009, with the most recent growth rate (2010-2011) at 2% for the State of Washington.[53] Unfortunately, MSA data for 2010-2011 has not been published yet, but it is expected that the SMSA will have a better rate than the State of Washington. Economic forecasters are predicting that the City of Seattle will be the strongest market in the MSA, although not the first area in the nation to recover from the recession.

### F. Apartment Market and Supply Side Context

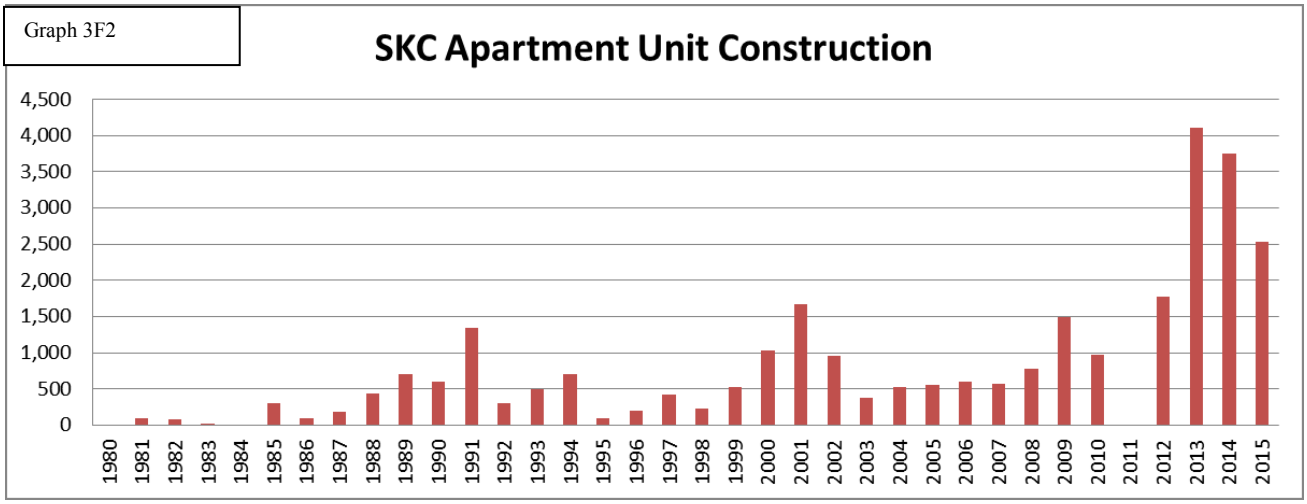
All detailed data points like building stock inventory, net absorption, vacancy rates, rental rates, comparable properties, concession and incentive information are in **Appendix A3-6**. A full list of all projects is given in **Appendix A3-7** through **Appendix A3-10** and a Map of development sites is at the beginning of this chapter, labeled **Map 3A4**.

Graph 3F1



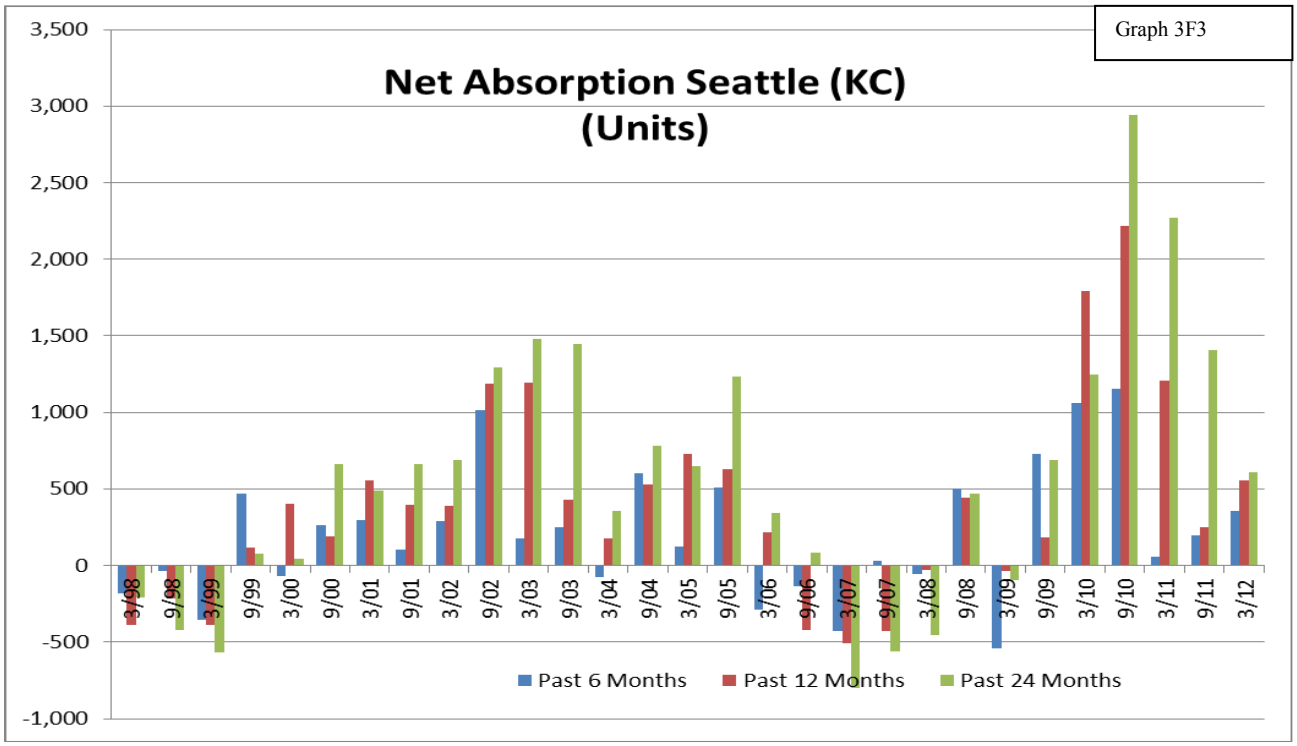

The historic apartment building stock, or inventory, has been decreasing over the last decade with a total stock of approximately 220,000 units in 2011 in the SMSA. **Graph 3F1** illustrates the SMSA apartment construction from 1960-2016. This shows that although the current boom is large, it is not the largest one Seattle has experienced historically. There will be approximately 31,000 units constructed between 2011-2016. Approximately 26,000 of these between 2012-2016, showing a disproportionate amount being delivered closer to 2016. Regardless, this in magnitude of increase to building stock is a significant at approximately 14% over five year.

Graph 3F2




**Graph 3F2** illustrates the Seattle King Central Area (SKCA) apartment construction from 1980-2015. The SKCA building stock forecast for 2016 is a total stock of approximately 43,000 units, which is comprised of volume of approximately 14,000 newly developed units. This represents a 50% increase in stock in five-year period. This shows that the forecast increase in apartment development in the SKCA area is a significant volume for this submarket.

**Graph 3F3** also illustrates net absorption data since 1998. The SKCA area has a 1.65% rate of annualized growth in units. The average net absorption in any one year time period is 393 units, with a standard deviation of 653. The historic maximum record is 1,046 and the minimum is -261. The full table from 1998-2012 is given in **Appendix A3-6**. The SKCA vacancy rate has averaged a 4.1% over the last 5 years. The March 2012 average is 3.1% and trending down or holding stable, from a high of 6.4% in March of 2009. All of this suggests increasing demand for apartments in this submarket.




There is a secondary issue that few seem to have realized or taken into consideration that may have a significant impact on rental market stock volumes and apartment's competitive position within the larger rental market. Namely, the decreasing trend in foreclosures will have a secondary impact on the apartment market through returning foreclosed properties to the rental market, which creates more properties that are competitive. These foreclosed properties will mimic foreclosure rates and trends from the previous year, lagging from initial eviction foreclosure proceedings date. There are currently approximately 30,000 properties vacant, while foreclosure proceedings take place. Assuming these properties average two bedrooms each, then this is approximately 60,000 units. Foreclosure rates dropped by 5,000 properties in 2012 and this will ripple into 2013 with the same 5,000 properties (10,000 units) becoming available.

Given the current mortgage credit market, these properties will likely be purchased by investors and converted into rental properties. Again, assuming these properties average two bedrooms each, then this is approximately 10,000 rental units hitting the market in 2013 and competing indirectly with apartments. Assuming this trend continues there is still a backlog of 50,000 units to be released to market. The impact of this is already starting to be felt as the market vacancy rate is stabilizing. Still, analysts have not been able to identify this as the cause, work it into any conversation or integrate it into quantitative analysis.

# Chapter 4: Net Absorption Model (NAM)

**Chapter Structural Outline**

A. **NAM Methodology Theory and Assumptions**
B. **Historic SMSA Demand NAM Methodology and Data**
C. **Focus of Thesis: NAM Methodology Forecast**

## A. NAM Methodology Theory and Assumptions

This section will address the demand and supply alignment research, through the net absorption model (NAM) methodology. In general terms, the NAM follows a demographic methodology. This method establishes a historic demand pattern, trends and statistics to act as a guidepost in the forecast. This NAM will focus on renter tenure and apartment capture above all other factors. The Census housing vacancy survey's historic housing tenure rates going back to 1965 and is the primary statistical data source for statistical guidepost limitations in the renter tenure forecast. Apartment capture ratios (ACR) at the market and submarket levels will be based on a comparison of methods that will give context and historically based statistical guideposts for forecasting. There will be a chapter for sensitivity testing. This chapter will illustrate the compounding effect of annual volatility to renter tenure and ACR in forecasting. The proceeding chapters will follow the simplified NAM methodology below:

1. Population
2. Average Household Size
3. Total Households (Population/Average Household size = Total Households)
4. Renter Tenure Rate
5. Total Renter Households
6. Annual Renter Tenure Change Rate
7. Apartment Market Capture Rate
8. Apartment Submarket Capture Rate
9. Net Absorption

A series of assumptions about renter tenure have been made in forecasting demand. The first assumption is that much of the demand seen in recent years is due to foreclosure activity, and, therefore, foreclosures will be the leading indicator of renter tenure in forecasting the next few years. The second assumption is that foreclosure rates will continue their current decreasing trend following home sales volume as an indicator of performance in the immediate future. The third assumption is that the speed of the decreasing foreclosure rate will soften as volumes reach their long-term average. The fourth assumption is that the deceleration of foreclosures will likely

happen in parallel with the economic recovery and the economic recovery will mimic the PSEF employment/unemployment forecast, which can be described as slow, steady and conservative. The fifth assumption is that renter tenure is reaching its historic maximum record limit. The sixth assumption is that there is a possibility that the renter tenure rate will simply reach its maximum limit, but it is unlikely to surpass it. This is inferred and supported by the comparison to the similar events in 1980's, where the volume of demand was higher. More detailed information on apartments is in **Chapter 3**.

A series of assumptions about the apartment capture ratio (ACR) will guide the value selection to forecast demand. The general assumption is ACR calculation methods will produce several data points, create historic data trends, and context to act as guideposts in selecting the ACR values at both the market and submarket levels. Sensitivity testing will explore the possibility and a range of increasing SMSA market and SKCA submarket a capture ratio.

## B. Historic SMSA Demand NAM Methodology and Data

| Table 4B1 | Historic SMSA NAM | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| 1) Population (K) | 3,052 | 3,093 | 3,118 | 3,133 | 3,159 | 3,198 | 3,257 | 3,304 | 3,355 | 3,415 | 3,448 | 3,480 | 3,523 |
| 2) Pop.Growth(K) | 32.54 | 40.74 | 25.37 | 14.72 | 25.95 | 39.30 | 58.82 | 47.39 | 50.57 | 59.76 | 33.09 | 32.46 | 43.01 |
| 3) Average House Hold Size | 2.544 | 2.543 | 2.542 | 2.541 | 2.539 | 2.537 | 2.535 | 2.533 | 2.534 | 2.536 | 2.534 | 2.533 | 2.532 |
| 4)Total HH (K) | 1,197 | 1,216 | 1,227 | 1,233 | 1,244 | 1,261 | 1,285 | 1,305 | 1,324 | 1,347 | 1,357 | 1,374 | 1,391 |
| 5) HH Growth (K) | 9.06 | 19.76 | 10.46 | 6.28 | 11.19 | 16.47 | 24.20 | 19.72 | 19.17 | 22.76 | 10.90 | 16.29 | 17.63 |
| 6) Renter Tenure HH (RTHH) Rate | 37.87% | 37.07% | 37.16% | 36.30% | 35.35% | 35.37% | 35.04% | 36.32% | 36.81% | 37.26% | 38.45% | 39.45% | 40.05% |
| 7) RTHH (K) | 453.2 | 450.9 | 455.9 | 447.6 | 439.8 | 445.9 | 450.2 | 473.8 | 487.3 | 501.7 | 521.9 | 542.0 | 557.3 |
| 8) RTHH Growth (K) | (6.890) | (2.259) | 4.982 | (8.272) | (7.758) | 6.075 | 4.318 | 23.611 | 13.448 | 14.439 | 20.183 | 20.047 | 15.289 |
| 9) RTHHG Volatility | -0.87% | -0.80% | 0.09% | -0.86% | -0.95% | 0.02% | -0.33% | 1.28% | 0.49% | 0.45% | 1.19% | 1.00% | 0.60% |
| 10) SMSA Net Absorption | 7,070 | 1,099 | (89) | 208 | 447 | 3,467 | (2,686) | (2,274) | (143) | (1,872) | 11,430 | 1,529 | 5,199 |
| 11) SKCA Net Absorption | 193 | 399 | 1,236 | 432 | 527 | 631 | (420) | (118) | 444 | 186 | 2,216 | 252 | 1,327 |

The historic demand portion of the net absorption model (NAM) methodology detail will discuss each line item one at a time. The demand portion of the NAM starts at the market level, which includes the entire SMSA (Tri-county area) and then moves to the submarket target subject area (SKCA). **Table 4B1** shows the historic demand data points (annually) and benchmarks these against each other. All numbers in this demand portion of the model are represented in thousands

(K). Color-coding represents different sources or types of data like PSEF, Census Data or D&S. The blue color-coding represents PSEF data like population. The brown color-coding represents Decennial-Census, and includes data like *Average Household size, Total Households or Total Renter Households.* The green color-coding represents other Census-Bureau survey data (Table 14), like *Renter Tenure HH Rate*. The yellow color-coding represents the D&S data. Lastly, the white or uncolored data represents other informative data, and is often an intermediate calculation of the NAM. The full version of this table is in **Appendix A4-7**, which includes 1990, 1998 and 1999.

The first line of **Table 4B1** is the *Population* (Line 1) from Puget Sound Economic Forecaster (PSEF); A.K.A. Conway Pederson Economics. Both PSEF and ESRI's BAO were considered for this element. They are both very similar, with only a 3% discrepancy in 2011 and a 2% discrepancy by 2015, with BAO being the higher number of the two in both cases. PSEF is being chosen as the forecast source for the population estimate used in the NAM because PSEF focuses on economic impacts on population, which is having a prevailing effect on population growth. In comparison, BAO uses an extrapolation methodology based on recent historical age based geographic movements combined with an age based survival rate calculation.[54] More on PSEF or BAO's methodology is available on their websites.

*Pop. Growth* (Line 2) is the previous year's population subtracted from the current year's population. This line only offers a frame of reference, and is not used in any other part of the NAM.

*Average House Hold Size* (Line 3) represents the average number of individuals in a household. The NAM assumes a conservative stance of low volatility and follows the long-term trend of -0.0010 change per year based on change in Decennial-Census values between 1990 and 2010. Although this is a popular topic among demographers, this model does not consider this variable to be an important demand driver in the current economic climate. The most recent data clearly shows that this data point is suppressed due to economic factors that will not be alleviated quickly despite improving economic conditions. Specifically, there are several reasons why this approach is being chosen over other techniques to forecasting *average household size*. The first is that both historical data and the literature review shows the trend is trending very slowly, and

with very little volatility (i.e., it is stable)**.** The cumulative value of change in this rate between 2012 and 2016 equates to two people (total). Although, the literature does discuss recent suppression of growth in headship rates, it also correlates this to lack of strong economic growth. Although recovery is occurring, the economy is not experiencing strong growth, so this phenomenon is likely to continue for the next few years, creating stability in the rate. Lastly, is that over a relatively larger population size (i.e., SMSA) the level of volatility is stable for the practical purposes of this NAM. All of this will cause the rate to remain closer to the long-term average, without creating an increase in demand. There is no reason to use anything other than this historic trend based rate method. More information on average household size rate methodology, calculation and sourcing is available in **Appendix A4-1**.

*Total HH* (Line 4) represents the total number of households in any given year. This historic data is sourced from the 2011 Decennial-Census and non-Census years are extrapolated based on the long-term average. Forecast years are calculated by multiplying the *Population* and *Average HH Size*.

*HH Growth* (Line 5) is a calculation of annual household growth. The calculation involves subtracting the previous year's *Total HH*'s from the current year's *Total HH's* of line 4 (*Total Households)*. It shows the difference year-over-year. This is simply a different way of viewing the data to show annual volatility. The NAM will not be using this line as a guidepost or variable. It is provided as a frame of reference.

Lines 6-9 are all about *Renter Tenure* and are the focus of the demand portion of the NAM. These lines continue to organize *Renter Tenure* the same way as previous lines: *Rate*, *Total* and then *Annual Change*. There is a slight organizational change with *Renter Tenure* by adding a percentage of annual volatility in addition to the number. This is one more metric used to create historically based statistical guideposts for forecasting.

*Renter Tenure House Hold (HH) Rate* (Line 6) is the most important line of this demographic demand section of the NAM because this is where most of the change in demand is occurring. This line's historic data is from the Census-Bureau's *Housing Vacancy and Homeownership Survey* and dates back to 1965. [55]

**Table 4B2** is a sample of most recent two years from the original tenure rate survey table. The purpose is to first show that the 2012 value (40.05%) is taken directly from the Census survey data and secondly to show the source format for clarification of necessary adjustments. Although this data is desirable because of the length of its track record, an adjustment had to be made. The last three Decennial-Censuses are benchmarked against the survey. The benchmarking required a geographic adjustment with the "West Region" average renter rate is 39.51% with a standard deviation of 1.69% for the entire west coast. When benchmarked against the most recent three SMSA Census data points, the SMSA scores consistently lower with an average of 38.64% and a standard deviation of 0.89%. The comparison to the survey to the Census shows the SMSA rate is approaching the West Coast regional average in comparison to previous years. The annual West Coast record high rental rate is 42.15% in 1989 and the quarterly record high renter rate is 42.8% in 1983. If the average difference is applied to the annual MAX rates, then the SMSA has an adjusted MAX rate of 40.39%, historically. The SMSA has always had lower rental rates than the west region averages, with the two becoming closer more recently. These values should be used as guideposts in the forecast. This same source also indicates that the annual average for 2012 is 40.05% renter rate, which has not been seen since the last apartment bubble in 1997. The adjusted renter tenure record provides invaluable historically based statistical guideposts for benchmarking forecast values of renter tenure. For instance, the average renter tenure rate is 38.43% and a sample standard deviation of 1.25% in the SMSA. The lowest it has ever been (MIN) is 35.05% and the highest it has ever been (MAX) 40.39%. This statistical data will be used as a guidepost in forecasting renter tenure in **Chapter 5**. The complete statistical data is summarized in the forecast **Table 5C1**. Further details of the full record are in **Appendix A4-3**.

| Table 4B2 | First Quarter | Second Quarter | Third Quarter | Fourth Quarter | Annual Average | Rental Rate | Seattle MSA Rate |
|---|---|---|---|---|---|---|---|
| 2011 | | | | | | | |
| United States | 66.4 | 65.9 | 66.3 | 66.0 | 66.2 | | |
| Northeast | 63.9 | 63.0 | 63.7 | 63.7 | 63.6 | | |
| Midwest | 70.4 | 70.0 | 70.3 | 70.0 | 70.2 | | |
| South | 68.4 | 68.2 | 68.4 | 68.3 | 68.3 | | |
| West | 60.9 | 60.3 | 60.7 | 60.1 | 60.5 | **39.50** | **39.35** |
| 2012 | | | | | | | |
| United States | 65.4 | 65.5 | 65.5 | 65.4 | 65.5 | | |
| Northeast | 62.5 | 63.7 | 63.9 | 63.9 | 63.5 | | |
| Midwest | 69.5 | 69.6 | 69.6 | 69.7 | 69.6 | | |
| South | 67.5 | 67.4 | 66.9 | 67.0 | 67.2 | | |
| West | 59.9 | 59.7 | 60.1 | 59.5 | 59.8 | **40.20** | **40.05** |

Now that the data source has been described, an analysis of the data itself will yield context, growth rates, and frame volatility. In the last 15 years, there has been relatively high volatility in

renter tenure rates. The most dramatic change in renter tenure rates in any individual year occurred at the beginning of the record high mortgage foreclosures in 2007 at a growth rate of 1.28%. There was a second jump while still in the middle of the record high foreclosure rates of 1.19% in 2009. In contrast, historic decreases in rentership rates move much slower on average, with a record drop of -0.95% in 2004, the second biggest drop was -0.86% in 2003.

*Total Renter Tenure House Holds (RTHH)* (Line 7) represents the total number of renter households. Historically it is used to benchmark the *Renter Tenure HH Rate* from the Census survey against the Decennial-Census to ensure internal validity. Accordingly, it is provided as a frame of reference, and is not used in the NAM.

*RTHH Growth* (Line 8) represents annual renter tenure household growth or demand for rental products. This is a very important line in this NAM and the entry point for demand driver indicator values. The historic portion of the NAM shows the year-over-year difference or annualized change in the *Total Renter HH* volume. This represents the amount of demand in each year and can be compared to demand driver volumes to determine which variable is driving demand like foreclosure. This historical data will be used to create a historic statistical guidepost in the forecast.

*RTHHG Volatility* (Line 9) is a measure of annual renter tenure household growth volatility. This historical data will be used to create historic statistical guidepost in the forecast.

*SMSA Net Absorption* (Line 13) represents net absorption of units in the SMSA. In most MSA demographic models, this line would be used to establish a market capture rate from the greater renter market to the smaller apartment market, then stop at this point. This line is in the demand portion of this model to give context to the SKCA submarket net absorption.

*SKCA Net Absorption* (Line 25) represents net absorption of units in the SKCA submarket. In a SMSA demographic model, this line would be used to establish a submarket capture rate from the larger MSA market and stop at this point. Demand is mobile or fluid and can be transferred from one submarket to another and supply is fixed in short run.[56] Annual supply can be a constraint that forces demand out to other submarkets. Other factors like growth management restrictions and smart growth incentives can also influence submarket net absorption. This line is in the demand portion of the model to give context to the final net absorption forecast and sensitivity testing.

## C. Focus of Thesis: NAM Methodology Forecast

A traditional market analysis will assess each step of the net absorption model (NAM) equally: population, household formation, housing tenure, apartment market capture and submarket capture. Each of these five parts of the NAM has its own demographic demand drivers and economic indicators of future performance, and some play a larger role than others do at different points in time. Of these five parts, this thesis will focus on renter tenure and apartment capture ratio (ACR) above all other portions of the NAM because these are currently experiencing the largest change (both in terms of current change and relative to historic norms). The renter tenure and ACR will be discussed in the following chapters. The parts of the NAM forecast that are not the central focus, but need to be discussed briefly for due diligence sake, are population and household size. Each of these is not being focused on for a different reason discussed later in this section. The quantitative data to support this chapter's qualitative analysis is in **Appendix A4-1**.

The population forecast is being deferred to Puget Sound Economic Forecasters (PSEF). PSEF was selected as the region's most reputable population forecaster due to a focus on an economic and conservatively oriented forecasting record.[57] Their estimates were recently revised upwards and the NAM was updated accordingly in January 2013. Population had a suppressed growth rate in 2009 of 0.94% and is forecast to increase in 2013 to 1.34%. The population part of the NAM is going to have an important impact due to job growth and the resulting immigration, but the type of immigration will have a more direct impact on the submarket ACR due to the recent changes in location of employers, than on other submarkets. The sensitivity testing shows that population growth could swing the bottom line by approximately 29% or 1,000 units in the SKCA area, assuming all other variables stay constant. This is out of 14,000 units being delivered and this swing alone is not enough to avoid high vacancy rates or a poorer than anticipated investment return. Population is clearly important and complicated to forecast, thus it is being deferred to a more experienced analyst (PSEF). All specific analysis of assumption, indicators and drivers will be differed to PSEF and any further assessment of their forecasting technique should refer to their website.[58]

The second point of assumption in the NAM is that average household size and the recommended rate is based on the average rate of change between 1990 and 2010 (-0.0010/year). This is the trend rate that is being selected in the forecast. This rate is being selected because of

the time period it was extracted from and/or represents. This time period takes into consideration both the decrease in average household size over the long-term and the rates stabilization over the most recent 3 decades (per the last three Decennial-Censuses). A more detailed description, historically supporting data, sensitivity tests, details of how this rate was selected, and methodological implementation, are shown in **Appendix A4-1**. Although there are different theories about how average household size could decrease by more than 10% in this decade, which would have a significant impact on any forecast, this high of a rate is not supported either historically, by demographic age cohort changes, or any other normal household drivers. In addition, even if the rate did increase from the recommended rate it would have a more significant impact in the long-term, than in this short-term forecast. Reasonable sensitivity tests to the recommended rate show a change of a few hundred units at the SMSA level and less at the target submarket level (SKCA). In comparison, the currently anticipated demand at the SMSA level is approximately 24,000 by 2016. This shows how these theories are not capable of creating the magnitude of change their authors suggest. (Various Authors cited in Literature Review and Bibliography) This is why it will not be the focus point of this thesis or the analysis of the NAM. More household details of this sensitivity test, other theories, and calculated impacts are presented in **Appendix A4-1**.

Table 4C

**Forecast MSA Demand NAM**

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1) Population (K)** | 3,257 | 3,304 | 3,355 | 3,415 | 3,448 | 3,480 | 3,523 | 3,572 | 3,620 | 3,660 | 3,698 |
| **2) Annual Pop. Growth (K)** | 58.82 | 47.39 | 50.57 | 59.76 | 33.09 | 32.46 | 43.01 | 48.76 | 47.64 | 40.20 | 37.82 |
| **3) Average HH Size** | 2.535 | 2.533 | 2.534 | 2.536 | 2.534 | 2.533 | 2.532 | 2.531 | 2.530 | 2.529 | 2.528 |
| **4)Total HH (K)** | 1,285 | 1,305 | 1,324 | 1,347 | 1,357 | 1,374 | 1,391 | 1,411 | 1,431 | 1,447 | 1,463 |
| **5) Annual HH Growth (K)** | 24.20 | 19.72 | 19.17 | 22.76 | 10.90 | 16.29 | 17.63 | 19.81 | 19.39 | 16.46 | 15.53 |

This concludes the parts of the NAM where assumptions or decision points of lesser importance are addressed for due diligence sake, and these points will not be discussed further. **Table 4C** is the forecast portion of **Table 4B** historic data and shows the forecast of population and average household size through 2016. The next few chapters will discuss the primary focus of the NAM, namely, renter tenure and apartment capture ratios (ACR).

# Chapter 5: NAM Tenure History and Forecast

**Chapter Structural Outline**

A. **Tenure: Demographic Demand Drivers and Economic Indicators**
B. **Identifying Renter Tenure Indicators for Forecasting**
C. **Forecasting Renter Tenure Rate**

## A. Tenure: Demographic Demand Drivers and Economic Indicators

There are many potential demand drivers and indicators for housing tenure, but they are not always relevant in forecasting, depending on the situation. Housing tenure has a complicated and constantly evolving dynamic that this section will discuss in several parts. This will start with a review of renter tenure rate history. Then an analysis of the corresponding drivers and indicators will show the dynamic nature of renter tenure during historically significant moments, but not all of these are significant today. The most recent shift in renter tenure has specific drivers and indicators that will be identified to guide the forecast. Even after identifying these specific indicators of renter tenure shift, there are some larger systemic factors that need to be taken into consideration as well. All of this will be assessed in this section and supported by detailed data in **Appendix A4 – (1,2,3,4,5,6)**.

Housing tenure has a long history of changing under different circumstances for different reasons. The ownership tenure rate had been approximately 45% between 1900-1950 nationally, which also means the corresponding rentership tenure rate was 55%. After WWII, renter tenure suddenly decreased significantly to approximately 40%, inversing the owner/renter ratio, and would continue to decrease in future decades. This change was arguably due in part to three factors; demographic change, a strong economy, and change in politically supported national financial policy. The demographic change due to a more family-oriented lifestyle after the war changed both population and household formation, while the Baby-Boomers were being born. A strong tailwind of economic future, while the rest of the world was digging itself out of the ruins of the war, helped the owner tenure rate rise, as well. The creation of modern mortgage underwriting policies and tax deduction benefits as part of the New Deal also played its part in shifting tenure towards ownership. The 40% renter tenure rate was stable until 1977 when the renter tenure rate then slowly increased over several years by 2%, to a total of 42% renter tenure. This shift was demographically driven and correlates with the Baby Boomer's movement out of their parents' homes and into apartments, bring the market with them. This rentership tenure rate

stayed relatively stable until 1997 when renter tenure rate suddenly started to decline until it hit a new national record low point around 31% in 2006. This change was not demographic in nature, but rather policy-driven by the mandated reinvestment in homeownership participation by historically underprivileged groups and the subsequent loosening of underwriting standards. In 2007, the renter tenure rate started to rebound. It started to increase suddenly and quickly at almost +0.5% per year as the Global Financial Crisis unfolded. Again, a demographic driver did not drive this, but rather by the inevitable collapse, resulting from the previous changes to America's housing policy and mortgage underwriting standards. This is the end of a quick summation of housing tenure history.

Several housing tenure drivers and indicators had different levels of importance during any of the previously discussed historically significant changes to renter tenure. For instance, one traditional demographic housing tenure driver is generational age cohorts, like the Baby-Boomers, which had a significant impact at several of the historically significant changes to renter tenure rate trends. Another housing tenure driver is household structure and formation, like decreasing average household size, which is related to deferment of marriage or reproduction, which had a consistent, low volatility, long-term impact than some of the other drivers. Lastly, another housing tenure driver is personal wealth and income, which is playing a more important role today. The economic factors like change in financial mortgage market underwriting standards (i.e., FHA), creation of secondary financial markets (i.e., CMBS), and general economic health (i.e., inflation-adjusted income) have all driven the housing tenure shift since the 1990's. These economic factors are measured by indicators like home sales volumes, foreclosure volumes, housing sale prices, interest rates, employment rate, unemployment rates, etc. All of these factors have driven housing tenure change or been indicators of housing tenure change in different ways at different points in time and only a few will be relevant in forecasting upcoming shifts in renter tenure.

Some of the specific economic indicators that should be briefly covered because of their historic or theoretical importance to housing tenure shifts despite their lack of impact on the current renter tenure shift and forecast are interest rates, employment, unemployment, income and wealth. For instance, interest rates have some impact on home ownership and have dropped to historically low levels in an effort to stimulate the economy. The Federal Reserve has been trying to promote a stronger economy by promising to keep interest rates close to 0% through 2015. In

the wake of the 2008 crash, the Federal Reserve's mission has been revised to explicitly pursue an unemployment rate of 6.5% in addition to a stable and low inflation rate of 2%. Although this is intended to stimulate the economy and home ownership, mortgage underwriting terms relatively tight, and will prevent most people from securing the debt financing necessary to own a home. Investors will be able to take advantage of these low rates. The end result is that renter tenure will not be impacted by interest rates to the extent it normally should when interest rates are this low. Secondary markets have already begun investing heavily in housing markets for the first time in years.[59] The Primary buyers are investors looking to buy properties for rental purposes, which has no impact on renter tenure. Another is employment, which should also push housing tenure towards increasing the home ownership tenure rate. Employment dropped significantly in 2009 and growth is now still lower than average (26,000 or 2.3% annually). Employment growth is forecast to return to the average rate during the Seattle forecast, but is not expected to surpass it. This below average employment growth could create more demand for the rental market. Employment is related to unemployment but they do not always run parallel due to the calculation methodology. The unemployment rate peaked in 2010 and has been dropping slowly, with the more recent rate in 2013 at approximately 7.6%. Assuming unemployment continues to slowly decrease, this should have almost no impact on housing tenure. In contrast, income and wealth has a slightly different, but similar, circumstance than interest rates, employment and unemployment. Although incomes are forecast to increase, when adjusted for inflation and cost of living, real income is relatively flat or negative. With a clear long-term trend of decreasing affordability and increasing wealth inequity, this may increase demand for renting in both the long-term and the short-term. All of these indicators are similar in that they are normally considered significant and in that, they are not significant at the moment. Supporting data for this paragraph is in **Appendix A3-4**.

In conclusion, many traditional drivers and indicators like interest rates are not showing a clear impact on the renter tenure rate. In contrast, other indicators have become popular in recent years as they accurately heralded the massive changes in renter tenure rates. The data on all of these drivers and indicators supports the conclusion that the recent significant housing tenure change was not caused by demographic demand drivers, and heralded by economic indicators. These same indicators can still be used to forecast how much further this trend will go.

## B. Identifying Renter Tenure Indicators for Forecasting

At different points in time, some indicators herald the arrival of changes while others do not. Since the 2008 crash, many traditional indicators have not impacted housing tenure in the way they previously had. For instance, decreasing interest rates should have stabilized dropping home sale prices, home sales volumes, and increasing foreclosure rates, but instead the resulting shift in housing tenure towards renting continues to this day. The clearest indicators today are low home sales volumes, record high foreclosure rates, low home sales prices and tight mortgage underwriting standards. These national indicators preceded housing tenure change in the SMSA by 6-12 months. In addition to these specific indicators, some forecast impact must be acknowledged to systemic changes in recent years. Lastly, historically based statistical data will help to guide the forecast. The combination of these three different types of data is the basis for guiding the forecast.

The first indicator to preempt the 2008 crash was national home sales volumes, which showed significantly high volatility for several prior years. This was partially due to the home sales volume rate significantly decreasing in 2006, but also unexpectedly due to a significantly high rate in 2004. In 2004', homes sales volume annual growth increased by 21%, in comparison to the standard deviation being benchmarked at 10.8%. A value double the normal standard deviation growth rate should have been a red flag for investors on Wall Street and Government agencies, like Fannie Mae, Freddy Mac, and the Federal Reserve. In addition, there was a significant decrease in 2006 of -11.21%, in comparison to the standard deviation (mean) at -9.68%. Then, in 2007, the rate decreased further by -15.56%. These values demonstrate significant elevations in volatility, heralding the 2008 downturn by approximately2 years. The most recent home sales volume data shows it being slightly negative or just below average at -1.2% from 2011 to 2012.

The next best indicator that preceded the 2008 crash was the national foreclosure rate, which also showed significantly elevated volatility far beyond the standard deviation 1 year in advance of the crash. In 2007, the national foreclosure rate increased sharply by 42.5% growth rate of 21 units (/10,000 units) to a total of 49.6 units (/10,000 units). Although the previous year had a rate of 28 units per 10,000, the foreclosure rate had been increasing for several consecutive years, giving the appearance of a slow climb. This may have underwhelmed analysts into ignoring it until 2007. The foreclosure rate made a similar jump again in 2008 by 48% growth rate of 46

units (/10,000 units) to a total of 98.8 units (/10,000 units). As a frame of reference, the upper standard deviation threshold to the mean is 33.3 units (/10,000 units), which was almost reached in 2006 and clearly surpassed in 2007. In addition, the annual growth upper standard deviation threshold from the mean is 10.7(/10,000 units), which was also surpassed in 2007 and 2008 by 2 to 4 times, respectively. This high rate of foreclosure peaked in 2011, and showed clear signs of decline in 2012. Although foreclosure does not move perfectly in tandem with renter tenure rates, their movement is highly correlated at a rate of 91% between 2008 and 2012, and 62% between 1998 and 2012. This was a simple correlation calculation between annual renter tenure volumes and annual foreclosure volumes. This time distinction is important because foreclosure was rightfully not considered an important indicator prior to 2006. Foreclosure was never considered an important economic indicator until 2007 and took most analysts by surprise, as rates became 5 times the normal amount or more. Seattle's foreclosure rate trends have lagged the nation until recently. Foreclosure rates are decreasing but anticipated to remain elevated. Foreclosure will continue to be an important indicator of renter tenure change for a few years. The most recent foreclosure data is also negative, showing elevated foreclosure rates that are still 4 times the long-term average. Fortunately, Seattle foreclosure rates are much lower in 2012 (15,000 units) than they were in 2011 (20,000 units). However, foreclosures are still very elevated from their long-term average of 3,500 units /year. **Appendix A4-1** gives more detailed analysis of this data.

The third indicator to show signs of the impending recession was home sale prices. In 2007, home sales prices were slightly below their average annual growth at 0.48%. Alone, this was not significant, but when combined with the previous two indicators, should have set off every alarm for real estate investment analysts. In addition, the previous years had shown higher than normal rates of volatility. Housing prices dropped significantly between 2008 and 2011 by about 23.61% nationally and 34.42% in the SMSA. Prices started recovering in 2012, but have recently stalled. The most recent home sales values are a positive number at 1.32%, but still below average (3.35%). These are the only indicators that showed clear signs before all others, which is why they are being selected as the primary indicators to guide the forecast. These three indicators show an improving but still weak economy. This indicates that renter tenure rates will likely demonstrate increases in percent of renters, but at a much slower speed than in 2011. These rates indicate that the renter tenure shift in 2013 will look slightly lower than 2012, but not by much.

In addition, there are other larger, more general, and systemic economic drivers that impact housing tenure, such as the mortgage market and secondary financial markets. The economic downturn played its part as a driving force and accelerated the housing tenure shift, but the changes in underwriting standards will having a lasting systemic impact well after the economy recovers. Recent changes to mortgage underwriting standards most noticeable impact is in reducing the annual number of renters becoming owners. Normally housing tenure shifts towards ownership in near equilibrium circumstances or when underwriting changes in favor of ownership like between 1997 and 2006. Since underwriting moved back to the traditional standard in 2009, the policy now favors renting relative to the current housing tenure balance, because the housing tenure rate was relatively skewed towards owning and nowhere near equilibrium. This will cause the number of renters converting to ownership to stall until near equilibrium can be reached. Traditional equilibrium was reached in 2011, but housing tenure conversion rates from renting to owning are still low because mortgage-underwriting standards are being implemented in a conservative manner. This will continue to push housing tenure towards renting in the short-term, but not in the long-term. In the long-term equilibrium will be reached and stabilize the mortgage market. Future change to underwriting policy may soften and move the equilibrium point closer to our current position, thus entry for renters into homeownership. There have been some signs of this kind of policy change from many different federal organizations. Fannie Mae has been slowly releasing mortgages into the private market. The Obama Administration has been pushing programs for loan forgiveness against predatory loans. The Federal Reserve has been stating they will keep interest rates low while also targeting low levels of unemployment. At the same time, sub-prime mortgage lending is back, but with mandatory homeowner insurance against a decrease in home value.[60] This may signal a return to pre-recessionary banking and investment policies that will inevitably cause a similar outcome to the 2008 crash.

In addition to the indicators discussed previously, statistical guideposts will be used to benchmark rates to long-term historic norms and moderate extreme values to give a more balanced forecast. Although the

| Table 5C1 | Average | Stand. Dev. | MIN | MAX |
|---|---|---|---|---|
| **6) Tenure-Renter HH Rate** | 38.43% | 1.25% | 35.04% | 40.39% |
| **8) Annual Renter HH Growth (K)** | 6.446 | 10.736 | (8.275) | 23.603 |
| **9) Annual Tenure Volatility** | 0.01% | 0.779% | -0.95% | 1.28% |

statistical guidepost approach can be used in any line of the model, it will focus on the historical renter tenure rate. The historic data is summarized in **Table 5C1**. This will be discussed in greater detail while being implemented. Although renter tenure rate will be the main focus, growth and volatility will also be monitored, but with the explicit task of remaining within a standard deviation of the average when possible and absolutely not going beyond the MAX record limit. The point to keep in mind is that the SMSA surpassed an important renter tenure rate threshold of 39.9% in 2012 with a rate of 40.05% and will likely approach the record high rate of 40.39% in 2013. Again, the renter rate is already near its historically high limit and a paradigm shift in the fundamentals would be the only explanation for the rate to surpass its historic record, but this is unlikely. The logical conclusion is the shift in the renter tenure rate towards renting is reaching the end of this trend cycle and likely to stabilize a little higher than its current rate in the near future.

The housing tenure record is a quarterly survey collected by the Census-Bureau since 1965. It is averaged annually for the "West Region." An adjustment was made based on benchmarking the quarterly survey data against Decennial-Census data across the two geographic areas. There is a margin of error (MOE) that is significant with only three benchmarks in the sample size (+/- 3.182%). Additional historic data will be used in the event of a value beyond the maximum (MAX) threshold to give context to the value's implications on the situation. It is also important to note that the historic housing tenure record in **Appendix A4-3** shows that, since 1965, renter tenure rate peaks only stayed elevated beyond the previous record MAX limit (39.89%) for two consecutive years, once, from 1983-1984. A comparison of the historic apartment construction shows that the 1980's apartment market and by extension the renter market boom was significantly larger for Seattle than the current boom, particularly in annual volatility. Although, this type of scenario is statistically unlikely to happen, the margin of error (MOE) due to the adjustment may become an issue this close to the limit.

### C. Forecasting Renter Tenure Rate

This section forecasts the renter tenure demand portion of the Net Absorption Model (NAM). A detailed table to elucidate each cell value in the model accompanies the forecast. The demand drivers and indicators for the forecast were discussed in the previous sections of this chapter. The model is conditionally formatted to color code statistically deviant values in forecast years. This is done to make the data more easily digestible. Three levels of conditional formatting are

applied to the forecast values. Any value outside the normal standard deviation, but within the minimum (MIN) or MAX limits, of renter tenure, renter tenure growth or renter tenure volatility (Lines 6-9) is color coded orange. The Second level is to color code any value outside the MIN/MAX limits to be red. (Note: no such values are present in Table 5C3, but will appear in sensitivity testing tables.) Any value inside the normal standard deviation is color coded white/transparent. As previously discussed (**Chapter 4: Section B**) some color-coding in historic date represents differing data sources (i.e., Census), which are represented by the colors blue, green, and brown.

| Table 5C3 | Forecast SMSA NAM | | | | | |
|---|---|---|---|---|---|---|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| 1) Population (K) | 3,480 | 3,523 | 3,572 | 3,620 | 3,660 | 3,698 |
| 2) Pop. Growth (K) | 32.46 | 43.01 | 48.76 | 47.64 | 40.20 | 37.82 |
| 3) Average HH Size | 2.533 | 2.532 | 2.531 | 2.530 | 2.529 | 2.528 |
| 4)Total HH (K) | 1,374 | 1,391 | 1,411 | 1,431 | 1,447 | 1,463 |
| 5) Annual HH Growth (K) | 16.29 | 17.63 | 19.81 | 19.39 | 16.46 | 15.53 |
| 6) Tenure-Renter HH Rate | 39.45% | 40.05% | 40.25% | 40.20% | 39.90% | 40.00% |
| 7) Total Renter HH (K) | 542.0 | 557.3 | 568.0 | 575.1 | 577.4 | 585.0 |
| 8) Renter HH Growth (K) | 20.047 | 15.289 | 10.758 | 7.087 | 2.276 | 7.660 |
| 9) Growth Volatility | 1.00% | 0.60% | 0.20% | -0.05% | -0.30% | 0.10% |

**Table 5C3** illustrates several data points with the primary focus being the *Tenure-Renter HH Rate* demand forecast in Line 6. Previously discussed in **Chapter 4** is a description of historic data from the same lines 1-5 of **Table 5C3,** and an explanation of why they will not be the central focus of this thesis and NAM. They are presented here to provide a frame of reference, and are not used by the NAM. As a reminder, there are two general assumptions that are applicable to the selected values of Line 6 for this recommended forecast. The first is that demand will continue to be driven as indicated at different times by different factor as previously discussed in **Chapter 4**. The second is that historic statistical guideposts can be used to benchmark values and moderate extreme values. In this scenario, we assume that these assumptions are the most pertinent to forecasting fundamental demand and should be balanced equally or as realistically as possible for each value.

*Tenure-Renter HH Rate* (Line 6) is the most important line of this scenario and this entire thesis. As such, this portion of the analysis will be assessed in great detail one cell value at a time. This line shows historically elevated rates for several years and is the limiting factor for this scenario.

Every value on this line is balanced against other factors, both in other years of this line and other lines. For each value shown on the table an assessment of the closest possible minimum and maximum alternative values will be explained to give context to the value that is chosen in this scenario. This complex relationship must be assessed one value at a time. The most recent update for renter tenure rates is for Q4 of 2012. Q1 2013 is not available at the time of the most recent update.

The 2013 selected value of 40.25% is nearing the record MAX limit of 40.39% from below; hence, the conditional formatting is orange. The 2013 value has a delicate balance to maintain with future year values for both renter tenure rates and foreclosure rates, while heeding historic statistical thresholds and guideposts. Potential volatility needs to be established at the MIN and MAX limits to give a better understanding as to why 40.25% was selected as the recommended rate for the forecast. Based on last year's reduction of 5,000 units, indicators showing 2013 will be similar to 2012, and slowly decreasing foreclosure rates, there should be a reduction of between 3,000-5,000 units in 2013. The minimum volatility in 2013 is set at 40.20% because any lower value than this will cause the 2013 *Annual Renter HH Growth* (Line 8) to have an annual change that is too large relative to the 2012 value and too high to manage relative to 2014 value, and ignores the still elevated foreclosure rates of 2013. The maximum volatility in 2013 is set at 40.39% because any higher value will increase the value beyond the record MAX limit. The end result for the 2013 value is on the low side of the possible spectrum at 40.25% because the current economic indicators are showing neutral or conflicting signs like home sales volume being slightly negative while home sales prices are increasing.

The 2014 selected value is 40.20%, which again, is still within historical limits and is thus conditionally formatted as orange. The 2014 values also have a delicate balancing act between various limiting factors. Given the 2012-2013 *Tenure-Renter HH Rate* and the 2014 forecast foreclosure rate, the options become limited. The forecast employment growth drops slightly and unemployment is forecast to drop as well. All of these factors indicate the annual volatility rate should decrease from the previous year by 3,000–4,000 units in 2014. The minimum possible acceptable value limit is 40.20%, given the 2014 forecast foreclosure amount (7,000 units), which should be approximated and should be slightly higher than the forecast rate (e.g., 120%). More information on this subject is in the **Appendix A4-1**. The maximum limit the rate can be is 40.39%, because this is the record MAX limit. This rate will also cause the 2014 forecast

foreclosure rate to be significantly higher than anticipated in a year that should be approaching the normal long-term foreclosure range. It will also cause the 2015 *Annual Renter HH Growth Rate* (Line 8) to be significantly lower, thus forcing further adjustment to the forecast *Tenure-Renter HH Rate* (Line 6) in 2015 to a significantly higher value and starting a domino effect. The balance is found in 2014 with a rate of 40.20% being at the lower end of the range because home sales values and volumes are indicating mixed signals of a slowly improving homeownership market, thus a decrease in tenure-renter rate.

The 2015 selected value returns to 39.90%. It is also color coded orange, indicating the value is still elevated above the threshold of 39.89%, but below the MAX threshold of 40.39%. 2015 should be the first full year where foreclosure rates are no longer elevated and the economy is also projected to be doing well. Unemployment is still decreasing. This may be the first large sales volume and sales price increase year since 2006. The minimum acceptable volatility rate is 39.90% because any lower than that and the 2015 *Annual Renter Growth* will be too low and 2016 rate will be too high. The maximum acceptable renter tenure rate is 40.15%, because anything higher than that indicates a below average homeownership market in a year that should be good for homeownership. In this range, the balance is found at the lower end of the range at 39.90%, because this will be the third year in a row of steady positive economic growth leading to increasing rates of home-ownership.

The 2016 selected value is 40.00%. It is color coded orange, indicating the value is below the MAX limit but still more than a standard deviation from the average. Although renter tenure rates should be returning to the average, there is also likely to be a recession starting. The employment and unemployment projections are flat. All other indicators are slightly negative. The minimum acceptable rate is 39.90% because this was the previous year's rate and 2016 will likely be worse economically. The maximum acceptable rate is 40.10% because any rate higher than this indicates a return to elevated levels of renter tenure change that only been seen when foreclosure rate are very high. In this range, the balance is found in the middle at 40.00%.

*Renter HH Growth* (Line 8) shows the anticipated annual change in renters, which is primarily correlated to the previously mentioned foreclosure forecast. This scenario assumes that foreclosure rates will follow the previously discussed trends. It also assumes that the Seattle rate of foreclosure will match the current lag behind national rate trends (i.e., a decrease). As you can

see the conditional formatting is clear (i.e., white), which means that all the values are within one standard deviation of the historic average.

*Growth Volatility* (Line 9) shows the annual volatility in any given year. Again, the conditional formatting is clear (i.e., white) and well within one standard deviation of the mean. The purpose of this line is to act as a guidepost and as previously mentioned these guideposts will be established within normal statistical ranges (i.e., the conditional formatting will remain clear, or white).

# Chapter 6: NAM Apartment Capture Ratio (ACR)

**Chapter Structural Outline**

A. **Subject Apartment Capture Rate Introduction**
B. **ACR SMSA Market Level Analysis and Forecast**
C. **ACR SKCA Submarket Level Analysis and Forecast**

## A. Subject Apartment Capture Rate Introduction

The concepts of differing subject capture ratio methodologies was briefly covered in the literature review in **Chapter 2, Section E**. These general concepts will be applied to this thesis NAM, but will need to be modified slightly. Both the "current capture rate" (CCR) and "Prorata share" (PS) methods will be assessed, but the "rating system" method will not be used. The modifications to the two methods will start with the "subject" expansion to the apartment market. The apartment capture ratio (ACR) will then be modified in that the "competitive" properties will be substituted for the entire SMSA market area and the SKCA submarket area. Ideally, these two methodologies should produce similar results. Similar results will only happen in a stable market, which it is not. To compensate, an assessment of the different methods will be done to determine the appropriate rate.

## B. ACR SMSA Market Level Analysis and Forecast

The apartment capture ratio (ACR) at the Seattle Metropolitan Statistical Area (SMSA) is a market level capture assessment similar to the typical subject capture ratio methodology within a given market. The first part for determining the ACR is the CCR methodology (ACR-CCR). **Chapter 3** clearly detailed apartment supply data of current or new construction going back to 1990.

Table 6B1

**ACR-CCR**

| | 1990 | 2010 | 2011 | 2012 | 1990-2012 | Renter Rate |
|---|---|---|---|---|---|---|
| 7) Total Renter HH (K) | 396.92 | 521.92 | 541.97 | 557.25 | 160.34 | |
| s2) Occupied Units | 170.24 | 205.68 | 207.20 | 212.40 | 42.161 | **26.3%** |

**Table 6B1** data shows that between 1990 and 2011 there were approximately 37,000 units created. In comparison, during the same time period there were 145,000 new renters. The result is approximately 26% ACR-CCR. As a point of comparison, if the time period is changed to 1998-2011 the rate shifts slightly to approximately 23%. Following Fanning's methodology, this

creates an ACR-CCR of 26% as demonstrated in **Table 6B1. Table 6B1** is a sample of a few years of the complete chart, which is in **Appendix A5-7**.

| Table 6B2 | SMSA Prorata Share | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1998 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| s1)Total units | 195,782 | 205,433 | 207,940 | 213,815 | 217,787 | 219,365 | 224,703 |
| s2) Occupied Units | 187,881 | 196,260 | 196,117 | 194,245 | 205,675 | 207,204 | 212,403 |
| s3)Vacancy | 4.04% | 4.47% | 5.69% | 9.15% | 5.56% | 5.54% | 5.47% |
| s4) Prorata Share | 40.88% | 41.42% | 40.25% | 38.71% | 39.41% | 38.23% | 38.12% |
| s5) PS Volatility | 0.56% | -9.63% | -1.06% | -12.97% | 56.63% | 7.63% | 35.0% |

The second methodology for determining the ACR is the "Prorata Share" (ACR-PS) method. This ACR-PS method looks at the total stock at a static point in time. This perspective takes into consideration the entire history instead of the latest trend. By taking the ACR-PS method and expanding the history beyond a static annual value, this could create more context to determining a more accurate rate. The low volume of apartment stock is well known and documented, as discussed in the literature review. **Table 6B2** is a sample of the complete table and ACR-PS rate history is in the row numbered s4 (Line s4). Data between 1998 and 2011 shows the average ACR-PS is approximately 42%, with a standard deviation of 2.4%. The lowest the rate has been in this time period is approximately 38% in 2011 and the highest it has been in this time period is approximately 45% in 2005.

A review of these two ACR method support two conclusions. First, the long-term average ACR is more than 42% and probably approximately 45%. Second, there is a relatively high volatility in any given year of approximately 20%. This means that in any given year the ACR could be between 25%-65%. Given the currently increasing trend of apartment net absorption and all of the previously discussed economic and policy factors from **Chapter 3**, the conclusion is that the ACR is likely to be above to the long-term average (45%). Thus, 50% will be used as the selected value or recommended ACR and sensitivity testing will be done in a separate chapter to show the results of possibly higher rates. The forecast results of a 50% ACR at the SMSA level are shown in **Table 6B3.**

| Table 6B3 | Application of ACR | | | |
|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 |
| SMSA ACR | 5,379 | 3,544 | 1,138 | 3,830 |

**Table 6B4** shows these ACR forecast results and the impact they will have on vacancy rates (row s3). Please note that even at a 50% ACR the vacancy is still very high. The average vacancy

rate between 1998 and 2012 is 5.88% with a standard deviation of 1.51%. This means that any value higher than 7.39% can be considered elevated beyond the normal range and this is the point when rental rates will be forced to decrease. The highest the vacancy rate has been in this same time period was 9.15%.

| Table 6B4 | SMSA Vacancy | | | | | |
|---|---|---|---|---|---|---|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| s1) Total units | 219,365 | 224,703 | 232,912 | 241,893 | 247,711 | 250,811 |
| s2) Occupied Units | 207,204 | 212,403 | 217,782 | 221,326 | 222,464 | 226,294 |
| s3) Vacancy | 5.54% | 5.47% | **6.50%** | **8.50%** | **10.19%** | **9.78%** |
| s4) Prorata Share | 38.23% | 38.12% | 38.34% | 38.48% | 38.53% | 38.68% |
| s5) PS Volatility | 7.63% | 35.0% | 30.0% | 25.0% | -5.0% | -1.0% |
| 10) SMSA Net Absorption | 1,529 | 5,199 | 5,379 | 3,544 | 1,138 | 3,830 |

Comparing these rates to **Table 6B4** suggests that vacancy rates will be high enough to force a decreasing in rental rates well before 2016. These kind high vacancy rates will cause the rental rates to decrease significantly.

## C. ACR SKCA Submarket Level Analysis and Forecast

The ACR SKCA submarket level analysis will need to modify the methodology used at the market level to compensate for higher capture rate volatility at the submarket level.[61] As with the previous step "current capture rate," (CCR) and "Prorata Share" (PS) methodologies will be used, but these methods will be modified into two methods. The first will mimic the market level method used in the previous section and draw directly from demographic renter household data points. This *direct* method uses renter households as the denominator and is methodologically similar to the previous SMSA section, which only changes the numerator to the SKCA submarket level (e.g., CCR 7,419 units). The second will draw from data at the market level to the submarket. This is a two-step process, starting with the same SMSA ACR (CCR and PS) results from the previous SMSA section. Then it applies these results to the SKCA submarket by substituting the renter household from the denominator (e.g., CCR 97,700 units) with the SMSA market level results (e.g., CCR 24,520 units), and using the SKCA-ACR-CCR (e.g., CCR 7,419 units) as the numerator. All of this will double the number of points of reference around what is happening within the SKCA submarket. This higher level of understanding is critical in forecasting any submarket, due to its fungible nature or naturally higher level of volatility.

| Table 6C1 | ACR-CCR | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1990 | 1998 | 2011 | 2012 | 1990-2012 | 1998-2012 | Renter Rate | market |
| 7) Total Renter HH (K) | 396.92 | 459.55 | 541.97 | 557.25 | 160.34 | 97.70 | | |
| s2) Occupied Units | 170.24 | 187.88 | 207.20 | 212.40 | 42.16 | 24.52 | 26.3% | |
| ss2) Occupied Units | | 21,904 | 27,996 | 29,323 | | 7,419 | 7.6% | 30.3% |

The SKCA-ACR-CCR starts with almost the same **Table 6C1** as **Table 6B1**. **Table 6C1** is a short sample of ACR-CCR data table, meant to demonstrate the methodology and format. A full table of this same information can be found in **Appendix A6-1**. There are a few differences with **Table 6C1,** where information is added. The first piece is an additional row *Line ss2*, which represents the SKCA submarket level data. This is in addition to the row above it *Line s2*, which is SMSA market level data and is identical to the previous **Table 6B1**. The second piece is column labeled "*1998-2011*," which is added because the SKCA submarket data only goes back to 1998 and forces the CCR to create a secondary set of results in this row. The third is the addition of the last column labeled *Sub-market*.

Using the same ACR-CCR methodology as the previous SMSA section, for the SKCA submarket creates a direct ACR-CCR of 7.6%. This means that between 1998 and 2011, 7.6% of new renter households chose to occupy apartments in the SKCA submarket area. In contrast, a modified CCR-market method can add context and offer a different perspective. By conceptualizing the market as a pie and the submarket as a piece of that pie, this creates a different perspective. This shows the relative relationship between the SMSA-ACR-CCR (26%) and the SKCA-ACR-CCR-Market concept (30%). The two-step CCR-market method results in approximately 30% capture rate, in comparison to the 7.6% direct ACR-CCR method. This CCR-Market method means that of the 100% of apartments at the SMSA-ACR-CCR, that 30% went to the SKCA submarket level.

| Table 6C2 | SKCA Prorata Share | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1998 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| ss1) Total Apt Units | 22,548 | 25,430 | 25,768 | 26,418 | 27,590 | 29,004 | 29,087 | 30,871 |
| ss2) Occupied Units | 21,904 | 25,016 | 24,898 | 25,342 | 25,528 | 27,744 | 27,996 | 29,323 |
| ss3) Vacancy Rate | 2.86% | 1.63% | 3.38% | 4.07% | 7.47% | 4.34% | 3.75% | 5.01% |
| ss8) PS Demo | 4.77% | 5.56% | 5.25% | 5.20% | 5.09% | 5.32% | 5.17% | 5.26% |
| ss9) PS Volatility | -2.73% | -9.73% | -0.50% | 3.30% | 1.29% | 10.98% | 1.26% | 8.68% |
| ss10) PS Market | 11.66% | 12.60% | 12.69% | 12.92% | 13.14% | 13.49% | 13.51% | 13.81% |
| ss11) PSM volatility | | -0.04% | 0.09% | 0.24% | 0.22% | 0.35% | 0.02% | 0.29% |

The "Prorata Share" (PS) method will also give two data points: one, direct, and another, market. It will also give some statistical data and a trend line or recent activity. **Table 6C2** demonstrates a sample of the ACR-PS data set methodology and format. All annual data in this section is for the time period between 1998 and 2011. The full table is in **Appendix A6-2**. **Table 6C2** is similar to **Table 6B2** in many ways, and although there are some commonalities and differences, the focus of the table is to demonstrate the points of interest. The points that are of interest are Line ss8 and ss10. Line ss10 is of particular interest because it shows a clearer trend, which will be discussed shortly.

Line ss8 is a combination of methodologies most easily described as an ACR-PS-Renter households (RHH) methodology. It represents the percentage of total occupied units from the total renter households in any given year. The ACR-PS-RHH (Line ss8) results in an average of 5.22%, with a standard deviation of 0.3%. The lowest historic value on record is 4.77% and the highest is 5.70%. This ACR-PS-RHH was trending upwards until 2005 and decreased in the following years. The increase in ACR-PS-RHH prior to 2005 occurred despite stable number of occupied units, and was caused by the decrease of renter households. Between 2005 and 2006, the decrease in the ACR-PS-RHH rate was caused by a decrease in occupied apartment units while renter household rate was relatively stable. Starting in 2007, the ACR-PS-RHH continued to decrease despite an increasing number of occupied apartment units, due to a faster increasing number of rental households. These data points demonstrate increasing demand for the total submarket. This 5.22% average can be compared to the 7.6% from the previous *direct ACR-CCR* paragraph because of similarities in methodology due to comparison of occupied units to renter households. The distinguishing difference is that the former represents the total market in any given year, while the latter represents only the most current development over a time period. This comparison demonstrates that a growing percentage of new renter households are choosing

to live in the SKCA submarket over other submarkets. The conclusion from Line ss8 is that forecast demand is and will be higher in the SKCA submarket by more than 7.6% using a similar methodology in forecasting.

Line ss10 is a modified methodology most easily described as an ACR-PS-market (M) methodology. It represents the percentage of SKCA occupied units from SMSA occupied units, a Prorata Share within the market dynamic. The ACR-PS-M (Line ss10) results in an average of 12.5%, with a standard deviation of 0.75%. The lowest historic value on record is 11.33% and the highest is 13.8%. The trend is consistently increasing over the past 15 years, from 11.5% to 13.8%. This is significant because it shows the SKCA area taking a bigger portion of the pie every year. If this continues at its current trajectory, it may reach 15% ACR by 2016. This 12.5% average can be compared to the 30% from the previous CCR-Market paragraph, because they both use a market-submarket method from the SMSA to the SKCA area. Again, the distinguishing difference is that the former represents to the total market in any given year, while the latter represents only the most current activity over a time period. Again, this comparison demonstrates that percentage of new renter households are choosing to live in the SKCA submarket over other submarkets. The conclusion from Line ss10 is that forecast demand is and will be greater in the SKCA submarket by a growing percentage year-on-year.

The difference between the last two paragraphs comparison is that the SKCA-ACR-CCR-Market method more clearly highlights the degree of volatility that is occurring, with an 18% difference between ACR-CCR-Market and ACR-PS-Market. For this reason, the Market method should be implemented in the SKCA-ACR.

All of these methods indicate that significantly more development has occurred in the SKCA area recently, relative to historic norms and this area has the lowest vacancy rates of the SMSA indicating the strongest demand. Anyone who is familiar with Seattle growth pattern history and recent economic events of Amazon.com's headquarters moving into South Lake Union, expects this kind of growth to not only continue, but to increase significantly in the short term. More on Amazon.com, other economic events and GMA are in **Chapter 3: Market Context** and related appendices. All of these perspectives lead to the conclusion that the SKCA-ACR should be set aggressively at the highest rate and the most sensitive of the two methods to new changes in

| Table 6C3 | Application of ACR | | | |
|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 |
| SKCA ACR | 1,883 | 1,240 | 398 | 1,341 |

demand, at 35%. Even this may be surpassed and sensitivity testing will be done in the next chapter to address this issue further. When the 35% rate is applied through the previous discussed NAM forecast and appropriate ACR method, then it produces the results in **Table 6C3**. These results can then be analyzed for impacts on vacancy rates. **Table 6C4** shows the application of **Table 6C3** and the 35% ACR forecast to the target subject SKCA submarket in the bottom row (Line 11). This is the final forecast of net absorption and the output of the NAM. The impact of this ACR on the final net absorption values is pushing vacancy rates beyond the maximum limits, which will force rental rates to drop.

| Table 6C4 | SKCA Vacancy | | | | | |
|---|---|---|---|---|---|---|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| ss1) Total Apt Units | 29,087 | 30,871 | 34,983 | 38,739 | 41,272 | 43,805 |
| ss2) Occupied Units | 27,996 | 29,323 | 31,206 | 32,446 | 32,844 | 34,185 |
| ss3) Vacancy Rate | 3.75% | 5.01% | **10.80%** | **16.24%** | **20.42%** | **21.96%** |
| ss8) PS Demo | 5.17% | 5.26% | 5.49% | 5.64% | **5.69%** | **5.84%** |
| ss9) PS Volatility | 1.26% | 8.68% | 17.50% | 17.50% | 17.50% | 17.50% |
| ss10) PS Market | 13.51% | 13.81% | 14.33% | 14.66% | 14.76% | 15.11% |
| ss11) PSM volatility | 0.02% | 0.29% | 0.52% | 0.33% | 0.10% | 0.34% |
| 11) SKCA Net Absorption | 252 | 1,327 | 1,883 | 1,240 | 398 | 1,341 |

Although rental rates and concessions are not part of the NAM, vacancy rates can only go so high before concessions and rental rates will decrease. The change in rental rates acts as a release valve when pressure on vacancy rates are extreme and for this reason vacancy rates are not like the other guideposts of the NAM. Since rental rates and concession are not integrated into the model, vacancy rates will be allowed to climb without a counterbalance. The resulting elevated vacancy rates should be taken as a proxy for what should happen to rental rates and concessions. The increase in vacancy rate can be benchmarked against the SMSA's historic record MAX limit vacancy rate of 10.22% requiring approximately 8,500 units absorbed between 2012 and 2016, before rental rates start to decrease. More conservatively, the SKCA historic record MAX limit vacancy rate is 8.87%, which equates to approximately 9,000 units between 2012 and 2016. This occupancy forecast totals only 6,300 units.

# Chapter 7: Sensitivity Testing

**Chapter Structural Outline**

- **A. High Scenario Sensitivity Test**
  - **I. High Renter Tenure**
  - **II. High SMSA Market ACR**
  - **III. High SKCA Submarket ACR**
- **B. Low Scenario Sensitivity Test**
  - **I. Low Renter Tenure**
  - **II. Low SMSA Market ACR**
  - **III. Low SKCA Submarket ACR**

## A. High Scenario Sensitivity Test

The sensitivity testing for the potential results of a high value series of events is very important since the most likely values from the previous chapter resulted in problematically low values. The significance of this section is two-fold: first, in running the "high" scenario for value results; and, second, in determining where the breakeven point would be. This sensitivity testing will compound the results from the Renter Tenure, SMSA ACR and SKCA ACR. The primary limiting factor will become the historic statistical guideposts to help determine the limit of possible high forecasts. The term "guidepost" will be used to describe the application of these statistical values to a forecast value. These guideposts will help identify when the forecast value is outside of historically normal value thresholds and govern the limitations of the model. Basic historic statistics like mean, standard deviation, minimum (MIN), and maximum (MAX) will be used as guideposts in the forecast and anything outside these threshold values will be considered "elevated" or "unlikely", depending on which threshold is passed. "Elevated" means any value that is more than one standard deviation from the mean, but still within the MIN and MAX thresholds. "Unlikely" means any value below the MIN threshold or above the MAX threshold. Other historic trends or events will be taken into consideration and applied when values reach these thresholds.

### I. High Renter Tenure

**Table 7A1:** ***High Demand Forecast Scenario's*** purpose is to show the highest reasonable level of demand that can be expected. The primary forecast did year-by-year independent assessments of the high/low rate ranges in each year separately and this *High* scenario will assess the effects of compounding high estimates year-on-year. Again, Line 6 is the central focus of the model,

with Lines 8 and 9 functioning to moderate annual volatility in the same manner as the previous forecast.

| Table 7A1 | Forecast SMSA NAM | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| 1) Population (K) | 3,448 | 3,480 | 3,523 | 3,572 | 3,620 | 3,660 | 3,698 |
| 2) Pop. Growth (K) | 33.09 | 32.46 | 43.01 | 48.76 | 47.64 | 40.20 | 37.82 |
| 3) Average HH Size | 2.534 | 2.533 | 2.532 | 2.531 | 2.530 | 2.529 | 2.528 |
| 4)Total HH (K) | 1,357 | 1,374 | 1,391 | 1,411 | 1,431 | 1,447 | 1,463 |
| 5) Annual HH Growth (K) | 10.90 | 16.29 | 17.63 | 19.81 | 19.39 | 16.46 | 15.53 |
| 6) Tenure-Renter HH Rate | 38.45% | 39.45% | 40.05% | 40.39% | 40.51% | 40.15% | 40.30% |
| 7) Total Renter HH (K) | 521.9 | 542.0 | 557.3 | 570.0 | 579.5 | 581.0 | 589.4 |
| 8) Renter HH Growth (K) | 20.183 | 20.047 | 15.289 | 12.734 | 9.547 | 1.459 | 8.430 |
| 9) Growth Volatility | 1.19% | 1.00% | 0.60% | 0.34% | 0.12% | -0.36% | 0.15% |

*Tenure-Renter HH Rate* (Line 6) is the most important line of the model. This scenario shows very elevated values and stretches beyond the historic statistic guideposts, which are still the limiting factor of this scenario. Although the historic record will be broken, the model must still follow other norms of historic behavior such as not remaining elevated beyond the record for more than two years. A second unrelated constraining factor is that the selected value of renter tenure in one year will have an impact on the value in the following year and this value needs to be within reasonable limitations in comparison to forecast indicators discussed and implemented in **Chapter 5**. Each year's value is selected for different reasons and will be discussed individually.

In 2013, the selected rate is 40.39% and is selected because this is the current historic record MAX limit. In 2014, the selected rate is 40.51% and is selected despite it breaching the historic record MAX limit. This was selected based on a combination of factors. This is partially based on the growth pattern of the 1983-1984 apartment boom, which set the current record limit. It is also partially still based on the elevated foreclosure rate forecast of approximately 7,000 units and assumes the current trend of high renter tenure conversion continues. In 2015, the selected high value is 40.15% because it balances between the record MAX limit and recommended value. In 2016, the selected high value is 40.30% because it is balanced at the higher limit of its annual growth at a value higher than the average and appropriate for the forecast economic circumstances.

*Renter HH Growth* (Line 8) and *Growth Volatility* (Line 9) complete the same functions as they completed in the primary forecast. Please refer back to **Chapter 5** for details on these lines. The Net Absorption (Lines 13 and 25) ACR rates used are from **Chapter 6**, to keep the focus on the impact of the renter tenure rate change from **Chapter 6's** results. These rates will be updated in the next two sections to the "higher" scenario values and an updated table like **Table 7A1** will be reproduced with these higher ACR's.

### II. High SMSA Market ACR

This SMSA ACR high value sensitivity testing continues on the previous sections results. The results from the previous renter tenure high sensitivity test will be compounded with the ACR high value sensitivity testing. The ACR sections will rely on the historic statistical values to guide the results. In the primary forecast, a 45% ACR rate was selected based on a Prorata Share (PS) methodology. This rate and method was select based on the data indicating a return the mean from a record low point in the historic volatility record.

An argument that supports the possibility of the value being higher than the 45% average Prorata Share (ACR-PS) method follows this same concept of returning to the mean. The indicators show that like many previous cyclical trends in real estate markets this one is following the same pendulum style cycle, swinging from one extreme to another. The difference is that the volatility, like many other markets, is showing greater levels of volatility and setting new records high and low levels. Assuming this pattern continues, this theory suggests that an equal but opposite swing in volatility from what happened in the last decade is possible. In the previous decade, the CCR method demonstrated a 25% ACR. This demonstrates a 20% volatility from the mean of 45%. If this same 20% volatility is assumed to be the proverbial pendulum swing in a cyclical real estate market, then the high value could be as much as 65%. A 65% ACR results in the values in **Table 7A2** and this 65% value will be the High scenario's SMSA ACR value.

| Table 7A2 | Application of ACR | | | |
|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 |
| SMSA ACR | 8,277 | 6,205 | 948 | 5,480 |

When **Table 7A2** results are applied to the rest of the model to check against vacancy rates and impact on rental rates, then the effects are more favorable than the primary forecast. The resulting SMSA vacancy rates are demonstrated in **Table 7A3**.

| Table 7A3 | SMSA Vacancy | | | | | |
|---|---|---|---|---|---|---|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| s1) Total units | 219,365 | 224,703 | 232,912 | 241,893 | 247,711 | 250,811 |
| s2) Occupied Units | 207,204 | 212,403 | 220,680 | 226,885 | 227,834 | 233,313 |
| s3) Vacancy | 5.54% | 5.47% | **5.25%** | **6.20%** | **8.02%** | **6.98%** |
| s4) Prorata Share | 38.23% | 38.12% | 38.72% | 39.15% | 39.21% | 39.58% |
| s5) PS Volatility | 7.63% | 35.0% | 30.0% | 25.0% | -5.0% | -1.0% |
| 10) SMSA Net Absorption | 1,529 | 5,199 | 8,277 | 6,205 | 948 | 5,480 |

### III. High SKCA Submarket ACR

At the SKCA submarket level, the primary forecast uses a 35% ACR based on the CCR-Market method (30%) and currently increasing trends, while the SMSA-PS-Market method yielded a 13% ACR. This illustrates a significant change in this submarket ACR. The construction growth data does not support a cyclical theory explanation that rates are returning to the mean, like in the SMSA. The data indicates an ongoing trend pushing ever further away from historic norms. This trend may be a permanent change to local development patters due to economic and political changes. The reason that this difference is not cyclical or short-term volatility is that this 30% is increasing over a 15 year time period, while most other submarkets are experiencing a decrease in ACR. The distinction is that the SMSA level ACR is simply returning to the mean, whereas the SKCA area is making a clear departure away from the historic norms. The proof is partially what the difference between the two rates represents (30%:13%) and partially in that the rate of change is consistently increasing at 0.16% per year on average. This shows that not only is the recent rate of construction higher in the SKCA than is historically normal, but that the SKCA area is taking a larger and larger piece of the pie every year. Instead of slowing down to match the other submarkets in the region, it is speeding up. The conclusion is that the high sensitivity test will need to use a rate higher than the 30% ACR-CCR-PS used in the primary forecast. The challenge is that this situation is beyond any historic statistical benchmarks, which creates a challenging forecast and some concern about any higher forecast figures. An attempt has been made to use a case study method on the presumption that this submarket boom is partially due to Amazon.com presence. The assumption is that a similar situation may have occurred in the past, like Microsoft arriving in Redmond. After assessing Microsoft in Redmond, no link could be clearly established. This research discovered that the cause for the 1980's apartment bubble was a home mortgage credit freeze similar to the one we are currently experiencing, which explains why it was not geographically localized or driven by one employer. Please see **Appendix A7-1**

for more details. The annual volatility of the ACR-PS method may provide a benchmark that can guide the way. However, this is at the highest end of the range statistically, thus dangerous territory. To hedge against possibly overstating this rate too much a conservative number in the high range should be chosen. The highest the annual ACR-PS-Market rate has ever been is 36% in 2001, however the current trend gets to 35% from the 2012 rate and this is shown in the primary forecast of **Chapter 6**. Assuming the trend doubles in speed from 15% to 30% then this will create a 40% rate. The 40% rate will create the following net absorption values.

| Table 7A4 | Application of ACR | | | |
|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 |
| SKCA ACR | 3,311 | 2,482 | 379 | 2,192 |

When this 40% ACR is applied, it results in the rates in **Table 7A4**. **Table 7A5** illustrates the vacancy rates in this scenario. The rates are perhaps too low in 2013, but the following years high rates indicates the almost inescapable truth that vacancy rates will be high by 2015.

| Table 7A5 | SKCA Vacancy | | | | | |
|---|---|---|---|---|---|---|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| ss1) Total Apt Units | 29,087 | 30,871 | 34,983 | 38,739 | 41,272 | 43,805 |
| ss2) Occupied Units | 27,996 | 29,323 | 32,634 | 35,116 | 35,495 | 37,687 |
| ss3) Vacancy Rate | 3.75% | 5.01% | **6.72%** | **9.35%** | **14.00%** | **13.97%** |
| ss8) PS Demo | 5.17% | 5.26% | 5.73% | 6.06% | 6.11% | **6.39%** |
| ss9) PS Volatility | 1.26% | 8.68% | 26.00% | 26.00% | 26.00% | 26.00% |
| ss10) PS Market | 13.51% | 13.81% | 14.79% | 15.48% | 15.58% | 16.15% |
| ss11) PSM volatility | 0.02% | 0.29% | 0.98% | 0.69% | 0.10% | 0.57% |
| 11) SKCA Net Absorption | 252 | 1,327 | 3,311 | 2,482 | 379 | 2,192 |

This scenario creates 8,000 units of demand for the SKCA area. This end result is still relatively small in comparison to the 14,000 units being constructed in the area. In this scenario, vacancy rates are still elevated by 2016, and well over the historic record high of 8.87%. This departure from historically normal vacancy rates will necessitate a significant decrease in rents (and/or concessions). The only way to keep the vacancy rates below this record limit would be if the SKCA ACR increased to approximately 50%, assuming the previous SMSA ACR and Renter Tenure assumptions stay the same. Although nothing is impossible, the combination of all of these three factors (Renter Tenure, SMSA ACR, and SKCA ACR) occurring simultaneously seems highly unlikely. **Table 7A6** illustrates the overall flow of the NAM with all the "high" scenario values: Renter Tenure, SMSA ACR and SKCA ACR.

| Table 7A6 | Forecast SMSA NAM | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| 1) Population (K) | 3,448 | 3,480 | 3,523 | 3,572 | 3,620 | 3,660 | 3,698 |
| 2) Pop.Growth(K) | 33.09 | 32.46 | 43.01 | 48.76 | 47.64 | 40.20 | 37.82 |
| 3)Average HouseHold Size | 2.534 | 2.533 | 2.532 | 2.531 | 2.530 | 2.529 | 2.528 |
| 4)Total HH (K) | 1,357 | 1,374 | 1,391 | 1,411 | 1,431 | 1,447 | 1,463 |
| 5) HH Growth (K) | 10.90 | 16.29 | 17.63 | 19.81 | 19.39 | 16.46 | 15.53 |
| 6) Renter Tenure HH (RTHH) Rate | 38.45% | 39.45% | 40.05% | 40.39% | 40.51% | 40.15% | 40.30% |
| 7) RTHH (K) | 521.9 | 542.0 | 557.3 | 570.0 | 579.5 | 581.0 | 589.4 |
| 8) RTHH Growth(K) | 20.183 | 20.047 | 15.289 | 12.734 | 9.547 | 1.459 | 8.430 |
| 9) RTHHG Volatility | 1.19% | 1.00% | 0.60% | 0.34% | 0.12% | -0.36% | 0.15% |
| 10) SMSA Net Absorption | 11,430 | 1,529 | 5,199 | 8,277 | 6,205 | 948 | 5,480 |
| 11) SKCA Net Absorption | 2,216 | 252 | 1,327 | 3,311 | 2,482 | 379 | 2,192 |

## B. Low Scenario sensitivity test

The sensitivity testing for the potential results of a low value series of events is not very important since the most likely values from the previous chapter resulted in problematically low values already. This low scenario only evaluates how bad a worst-case scenario could be. This sensitivity testing will compound the results from the Renter Tenure, SMSA ACR and SKCA ACR. The primary limiting factor will be minimum demand from foreclosure on renter tenure and then regional employment changes impacting ACR. In addition, inter-annual impacts will keep the rates bound to one another and historic statistical guideposts to help determine the limit of possible low forecasts. Basic historic statistics like mean, standard deviation, minimum (MIN), and maximum (MAX) will be used as guideposts in the forecast and anything outside these threshold values will be considered "elevated" or "unlikely", depending on which threshold is passed.

### I. Low Renter Tenure

**Table 7B1:** ***Low Demand Forecast Scenario*** shows the lowest value scenarios and its purpose is the show the lowest reasonable level of demand that can be expected. The general assumptions from the introduction are still applicable and each cell value will be assessed one at a time. Like with the previous high scenario section, the low scenario section will compound low values, altering the overall outcome from the previously discussed primary forecast values in **Chapter 5**.

| Table 7B1 | Forecast SMSA NAM | | | | | |
|---|---|---|---|---|---|---|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| 1) Population (K) | 3,480 | 3,523 | 3,572 | 3,620 | 3,660 | 3,698 |
| 2) Pop. Growth (K) | 32.46 | 43.01 | 48.76 | 47.64 | 40.20 | 37.82 |
| 3) Average HH Size | 2.533 | 2.532 | 2.531 | 2.530 | 2.529 | 2.528 |
| 4)Total HH (K) | 1,374 | 1,391 | 1,411 | 1,431 | 1,447 | 1,463 |
| 5) Annual HH Growth (K) | 16.29 | 17.63 | 19.81 | 19.39 | 16.46 | 15.53 |
| 6) Tenure-Renter HH Rate | 39.45% | 40.05% | 40.20% | 40.20% | 39.90% | 39.90% |
| 7) Total Renter HH (K) | 542.0 | 557.3 | 567.3 | 575.1 | 577.4 | 583.6 |
| 8) Renter HH Growth (K) | 20.047 | 15.289 | 10.053 | 7.793 | 2.276 | 6.197 |
| 9) Growth Volatility | 1.00% | 0.60% | 0.15% | 0.00% | -0.30% | 0.00% |

*Tenure-Renter HH Rate* (Line 6) is still the most important line of the demand model and will show slightly lower rates. There are some general assumptions that are applicable to all the values selected. One constraining factor is that the selected value of renter tenure in one year will have an impact on the value in the following year and this value needs to be within reasonable limitations in comparison to forecast indicators discussed and implemented in **Chapter 5**. Each year's value is selected for different reasons and will be discussed individually.

The 2013 selected low value is 40.20% and is a balance of factors as previously discussed in **Chapter 5**. This value is both the low and recommended value. The 2014 selected low value is also 40.20% because this is the minimum amount possible while fulfill the still elevated forecast foreclosure rates. The 2015 selected low value is 39.90% and is also the same as the recommended. The reasons for this select are the same as is described in **Chapter 5**. The 2016 selected low value is 39.90% and assumes that the economy will be stable instead of recessionary, which is what the current forecast indicates.

*Renter HH Growth* (Line 8) and *Growth Volatility* (Line 9) complete the same functions as they completed in the primary forecast. Please refer back to **Chapter 5** for details on these lines. Net Absorption (Lines 13 and 25) show the results assuming the ACR at the SMSA level and SKCA level are not changed from **Chapter 6.** These ACR rates will change in the next few paragraphs.

### II. Low SMSA Market ACR

Using the ACR-CCR method described in **Chapter 6** suggests a low rate be below 30%, and most likely between 15% and 20%. Assuming the higher rate of 20% is more appropriate due to

15% being almost the current rate and it is currently trending upwards. This 20% rate produces the results in **Table 7B2**.

| Table 7B2 | Application of ACR | | | |
|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 |
| SMSA ACR | 3,016 | 2,338 | 683 | 1,859 |

This 30% ACR creates the vacancy results in **Table 7B3**. These vacancy rates are statistically elevated beyond the MAX record limit. In addition, Line s4 shows the Prorata Share to also be beyond the statistical MIN record limit. This data points indicates that this scenario is unlikely to occur.

| Table 7B3 | SMSA Vacancy | | | | | |
|---|---|---|---|---|---|---|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| s1) Total units | 219,365 | 224,703 | 232,912 | 241,893 | 247,711 | 250,811 |
| s2) Occupied Units | 207,204 | 212,403 | 215,419 | 217,757 | 218,440 | 220,299 |
| s3) Vacancy | 5.54% | 5.47% | **7.51%** | **9.98%** | **11.82%** | **12.17%** |
| s4) Prorata Share | 38.23% | 38.12% | 37.97% | 37.86% | 37.83% | 37.75% |
| s5) PS Volatility | 7.63% | 35.0% | 30.0% | 25.0% | -5.0% | -1.0% |
| 10) SMSA Net Absorption | 1,529 | 5,199 | 3,016 | 2,338 | 683 | 1,859 |

### III. Low SKCA Submarket ACR

The SMSA ACR-PS has shown a steadily increasing annual rate trend. Last year it was at approximately 13.5%. Assuming it continues the projected rate could be approximately 20%. Although this perspective is limited, it is methodologically accepted and offers a different perspective and lower rate.

| Table 7B4 | Application of ACR | | | |
|---|---|---|---|---|
| | 2013 | 2014 | 2015 | 2016 |
| SKCA ACR | 603 | 468 | 137 | 372 |

**Table 7B4** shows the results of the 20% rate. **Table 7B5** illustrates the resulting vacancy rates being elevated beyond the statistical MAX record limit. These rates are extremely high and will have a very negative impact on rental rates. Although Line ss10 shows the prorate share rising above the standard deviation threshold of 13.15%, this is a well-established trend that is likely to continue for the foreseeable future as described in **Chapter 6**.

| Table 7B5 | SKCA Vacancy | | | | | |
|---|---|---|---|---|---|---|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| ss1) Total Apt Units | 29,087 | 30,871 | 34,983 | 38,739 | 41,272 | 43,805 |
| ss2) Occupied Units | 27,996 | 29,323 | 29,926 | 30,394 | 30,530 | 30,902 |
| ss3) Vacancy Rate | 3.75% | 5.01% | 14.46% | 21.54% | 26.03% | 29.46% |
| ss8) PS Demo | 5.17% | 5.26% | 5.28% | 5.28% | 5.29% | 5.30% |
| ss9) PS Volatility | 1.26% | 8.68% | 6.00% | 6.00% | 6.00% | 6.00% |
| ss10) PS Market | 13.51% | 13.81% | 13.89% | 13.96% | 13.98% | 14.03% |
| ss11) PSM volatility | 0.02% | 0.29% | 0.09% | 0.07% | 0.02% | 0.05% |
| 11) SKCA Net Absorption | 252 | 1,327 | 603 | 468 | 137 | 372 |

**Table 7B6** illustrates a complete view of the low scenario. This shows Renter Tenure, SMSA ACR and SKCA ACR at the "low" scenario rates in a compound fashion. If this scenario were to occur it would create a large gap between demand and supply and ultimately resulting in lower than anticipated returns for investors. Fortunately, it is unlikely that all of these factors would all be low simultaneously.

| Table 7B6 | Forecast SMSA NAM | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| 1) Population (K) | 3,448 | 3,480 | 3,523 | 3,572 | 3,620 | 3,660 | 3,698 |
| 2) Pop.Growth(K) | 33.09 | 32.46 | 43.01 | 48.76 | 47.64 | 40.20 | 37.82 |
| 3)Average HouseHold Size | 2.534 | 2.533 | 2.532 | 2.531 | 2.530 | 2.529 | 2.528 |
| 4)Total HH (K) | 1,357 | 1,374 | 1,391 | 1,411 | 1,431 | 1,447 | 1,463 |
| 5) HH Growth (K) | 10.90 | 16.29 | 17.63 | 19.81 | 19.39 | 16.46 | 15.53 |
| 6) Renter Tenure HH (RTHH) Rate | 38.45% | 39.45% | 40.05% | 40.20% | 40.20% | 39.90% | 39.90% |
| 7) RTHH (K) | 521.9 | 542.0 | 557.3 | 567.3 | 575.1 | 577.4 | 583.6 |
| 8) RTHH Growth(K) | 20.183 | 20.047 | 15.289 | 10.053 | 7.793 | 2.276 | 6.197 |
| 9) RTHHG Volatility | 1.19% | 1.00% | 0.60% | 0.15% | 0.00% | -0.30% | 0.00% |
| 10) SMSA Net Absorption | 11,430 | 1,529 | 5,199 | 3,016 | 2,338 | 683 | 1,859 |
| 11) SKCA Net Absorption | 2,216 | 252 | 1,327 | 603 | 468 | 137 | 372 |

# Chapter 8: Conclusion

**Chapter Structural Outline**

- **A. Conclusion**
- **B. Lessons Learned**
- **C. Limitations**
- **D. Topics for Future Exploration**

## A. Conclusion

The conclusions of this thesis are many and can be organized into a few parts: literature, NAM results, sensitivity testing and alternatives. Each of these contributed to the final conclusion that there is a misalignment between supply and demand. This misalignment will become apparent at the end of 2014, while vacancy rates increase and cause rental rates to decrease. By 2016, the rental rate will drop substantially. The summary conclusion is that there will be a substantial misalignment and it will be enough to force rental rates to decrease significantly enough that investors can expect poorer than anticipated cash-flows, NOI, and/or ROI starting in 2015. The literature review of financial investment behavior indicates that even if this conclusion were taken as absolute truth, it would not dissuade investors from driving the apartment market beyond fundamental demand for the product type. Thus, there is no recommendation for an alternative course of action to mitigate the newly anticipated financial loss.

Specifically the literature review set the framework and foundation for this thesis topic. First and foremost, is that financial market behavior causing a bubble effect is a foregone conclusion. Speculatively, the only apparent distinguishing characteristic between bubbles, that are publically labeled as bubbles and those that are not, is that it is a bubble when there is no new investment type to pick up the slack on the bust phase. This cause further over investment in this one investment type and no clear exit until the market reaches critical mass and crashes, like in 2008. Secondly, the literature review supports the market analysis and net absorption model techniques. The use of demographic methodology and its limits are described and then applied in this thesis. Finally, the apartment markets history gives an explanation for the currently low level of apartment stock.

The NAM focused on Renter Tenure and Apartment Capture Ratios (ACR) because these are the points of most significant change. Renter tenure has experienced an increase of 107,000 people between 2007-2012, which averages 17,000 per year, when the long-term average is 6,400 per year. This shows a rate almost three times the normal annual rate or 165% above normal. The Renter Tenure rate is reaching a historically high and unsustainable level. It is likely to stabilize in 2013 and then drop slightly by 2016. This will create approximately 61,000 renters between 2011-2016. This is still elevated at, 29,000 more renter households than the long-term average. Since many of these households are not additions to the population but rather former owners who have been foreclosed upon, their former homes will become a large part of the rental housing stock. This impact will drastically reduce the amount of renter tenure demand. Currently there

are approximately 20,000 units stuck in foreclosure courts. Although this number will reduce, it will still consume much or the renter tenure demand.

The SMSA ACR historic data shows that this kind of boom is within the range of possibility, but it is pushing the record high limits. The long-term average is 45% and there is approximately 20% volatility. The amount of demand for apartments is likely to be elevated, while the housing stock remains constrained. This will prompt a higher than average capture ratio for apartment property types. A 55% forecast produces moderate results of approximately 25,000 households. There are approximately 28,000 units scheduled for development and it is likely more will be added to the pipeline before 2016. The NAM forecast of 55% will cause vacancy rates to be high (8%-12%) and will force mild rental rate decrease at the MSA market level.

The SKCA submarket target area ACR historic record shows a long-term average of 13% and a current rate at 31%. There is a much higher than normal rate of demand for central urban area for various reasons discussed in Chapter 4. Given the fundamental changes to the market and the fungibility of submarket capture ratios, it is reasonable to forecast the rate above the current 31%. The SKCA ACR will forecast will be 35% and this will anticipate demand at 6,400 households of demand. The current pipeline is scheduled to deliver 14,000 units by 2016 and there will likely be more units added to this pipeline before 2016.

Sensitivity testing was completed in chapter 7 to determine the highest likely forecast or statistically reasonable forecast, given the historic record. These results demonstrated that even under favorable conditions the results would still yield elevated vacancy rates that would necessitate the reduction of rental rates. Only under the most ideal of circumstances would the break-even point be reached, where vacancy rates would remain low enough to not decrease rental rates. For instance, the renter tenure rate could mimic the “high scenario” in chapter 7. Then, the SMSA ACR demand would have to be upwards of 65% ACR or the equivalent to 27,000 units. In addition, the majority of that demand for the SMSA would need to go to the SKCA submarket at a minimum rate of 55% household demand, which is an equivalent of 13,000 units. Even if all of this happens, it will only barely avoid record high vacancy and it is highly unlikely for a variety of reasons.

The traditional market analysis methodology used has limitations. If alternative methods and indicators are integrated, then results that are more accurate may be possible. For instance, an analysis of employment data is outside the parameters of the traditional market analysis, NAM or this thesis’s methodology. A cursory analysis showed slightly more optimistic results, but not by much. This data showed a delay of the misalignment impact by about 6 months, until mid-2015. These alternative methods suggest slightly higher demand than the primary forecast for the SMSA. This technique is not transferable to the submarket level.

## B. Lessons Learned

The general thesis topic of the current apartment market bubble is still as pertinent of a topic today as it was a year ago. The general concept of demand/supply alignment will continue to be a pertinent research topic for years to come in many disciplines, including the apartment market and other commercial real estate property types. I would pick the same topic again today, if I had the chance. I might change the specific perspective on the topic of apartments to focus on something other than net absorption. If I ever do a market analysis again, I would clearly describe what the deliverable would consist of and limit this to a few choice sections that does not include a net absorption model. It would consist of a separate national report. The main portion of the report would focus on MSA level information. This information would emphasize the market context, minimize the demand section to current trends, comprehensively cover the supply side and competitive stocks sales price history only, and compare the CCR and PS capture ratio methods.

### C. Limitations

Every methodology has limitations. It is only in hindsight that limitations of any methodology become apparent, which is part of the experience. Although there were many, only a few will be described, as examples. One limitation of this methodology is its narrow focus on demographics and failure to fully integrate several economic factors. Another, limitation is the lack of methodological quantitative proofing completed to date. This quantitative technique is not well-enough supported yet and creates a disingenuous impression on readers that there is a well-supported quantitative method behind the qualitative report. Contemporary market analysis and net absorption models are a professional's opinion, not a quantitatively proofed method that has been tried, true and accurate for many years. This method may become proven by academics through a multiple regression analysis of all drivers and indicators in the future.

### D. Topics for Future Exploration

Through the experience of creating this thesis there have been several points where other possible thesis topics became self-evident. These topics became self-evident due to the lack of information on these subject topics.

The first is GIS analysis of the current stock to determine accurate totals of each property type, such as apartment vs. condominiums or residential buildings with more or less than 20 units. This became self-evident as I compared the Decennial Census data on building stock to that of Dupre & Scott (D&S). As I read through both their methodologies it became clear that both had severe methodological limitations that would impact the accuracy of their count.

The second is expanding the digitization of the D&S net absorption model into Excel prior to 1998 using the Runstad Center archives. Their records go back at least another decade. Although costly to assemble, a complete record going back to D&S founding in 1981 would be a huge step forward in understanding net absorption in Seattle. If another data source could be located or supplemented to go back further than 1981, this would create an unparalleled net absorption data set for the Seattle apartment market.

The third is the expansion of the net absorption model (NAM) to automatically calculate rental rate estimates. This would require a detailed history of rental rates to create a linear regression model between vacancy rates and rental rates. An extra step would be to then somehow compare this to homeownership costs, both on a marginal cost and switching cost basis.

The fourth is an assessment of alternative apartment capture ratio (ACR) methodologies. This may be better described as a suggested process by which ACR should be determined. This process would use multiple econometric indicators, like employment forecasts, to affect the rate. Although this would require more data, this would be a good follow-up or supplement to the previous topic suggestion of expanding the NAM's historical record.

The fifth is multiple regression analysis of economic indicators that feed into any step of the NAM. For instance, housing tenure is impacted by a variety of indicators, such as foreclosure rates, interest rates, employment rates, unemployment rates, average income, average wealth, home values, rental rates, etc. These variables change in prominence at different points in time. Time period specific multiple regression modeling could assist in creating both ratios between the variables to housing tenure rates and create historically based statistical norms for those rates. This would create an additional metric to forecast variables more accurately. This is more complicated and may be better suited to a PhD dissertation or a professor's research.

# Appendix

The Appendix numbers are organized by chapter number, item number within the chapter, and item title. For example, Chapter 1 has no appendix item associated with it. E.g.:

**Appendix A1: None**

**Appendix A2: None**

## Appendix A3-1: Market Area MAPS

### King North

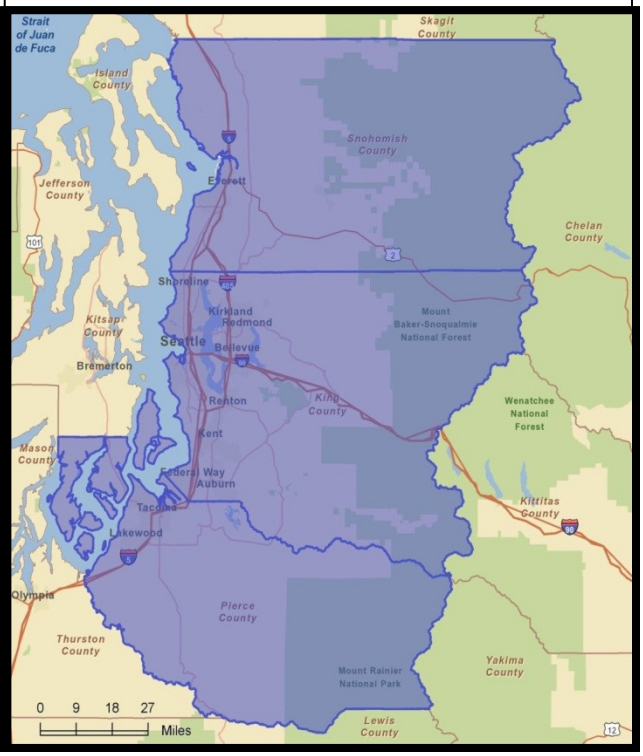
The D&S Investment report combines "central" and "north." The "North" area consists of the following neighborhoods.

| | | |
|---|---|---|
| Ballard | Green Lake | Wallingford |
| North Seattle | Shoreline | University |

### SMSA - Tri-County area

This three county SMSA will be used as a point of reference and for context. The SMSA is defined as the following three counties.

| | | |
|---|---|---|
| King County | Pierce County | Snohomish County |

| Combined King North & King Central | Seattle MSA (Tri-County) Map |
|---|---|
|  |  |

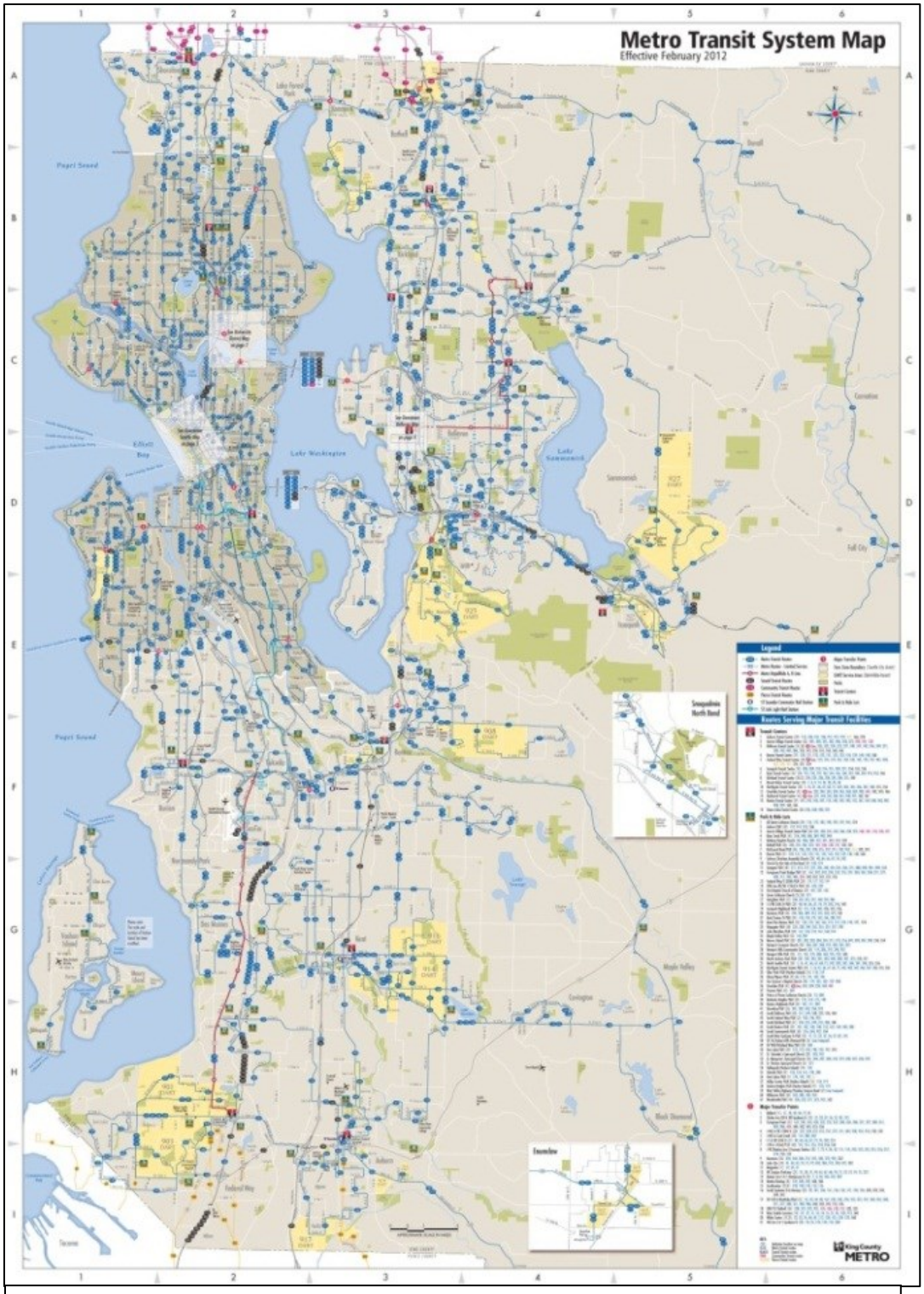
## Appendix A3-2: Amtrak Route MAPS and Seattle Topology Map


Amtrak Sounder- Cascadia Line
Source: Amtrak

Amtrak Northwest Routes
Source: Amtrak


Seattle Topo
Source: Coastal Magazine 1909

## Appendix A3-3: Bus Route SMSA 2012 MAP

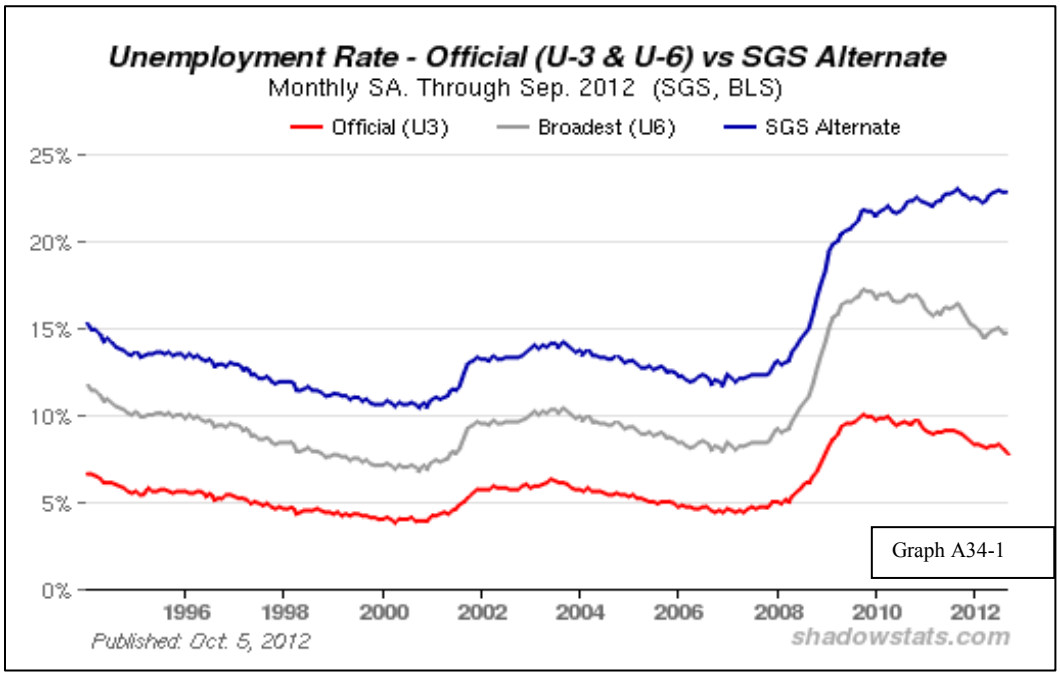



King County Metro Bus Routes

## Appendix A3-4: National Economic Market Context

### 1. National Economics

The impact of the recent economic recession, slow recovery, and the ongoing financial and banking scandals are having on the markets is overwhelming. No country in the world has escaped the global economic meltdown of 2008. Many articles written after 2008 preface with the unique nature for global economic markets in modern times. The impact has been felt at every level, top to bottom, all the way down into every American home. Although Robert Shiller warns against "New Era" thinking in his 2000 bestselling novel "Irrational Exuberance," it seems warranted in the view of the new economic paradigm of the wake of the Great Recession. Constant comparisons to the Great Depression have been so commonplace, since 2008, it is now cliché to the point of being mocked by media pundits as they deridingly say "The Great Recession." Without going into the details of the last four years global economic meltdown and the continuing financial scandals, the consensus seems to be that things will never be the way they were again, coining the phrase "the new normal."[62] 2012 is the year the economy turned the corner and showed signs of improvement. With national unemployment finally dropping below 8% in recent months, employment data steadily growing at a rate of more than 1% annually, GDP remaining averaging over 2%.

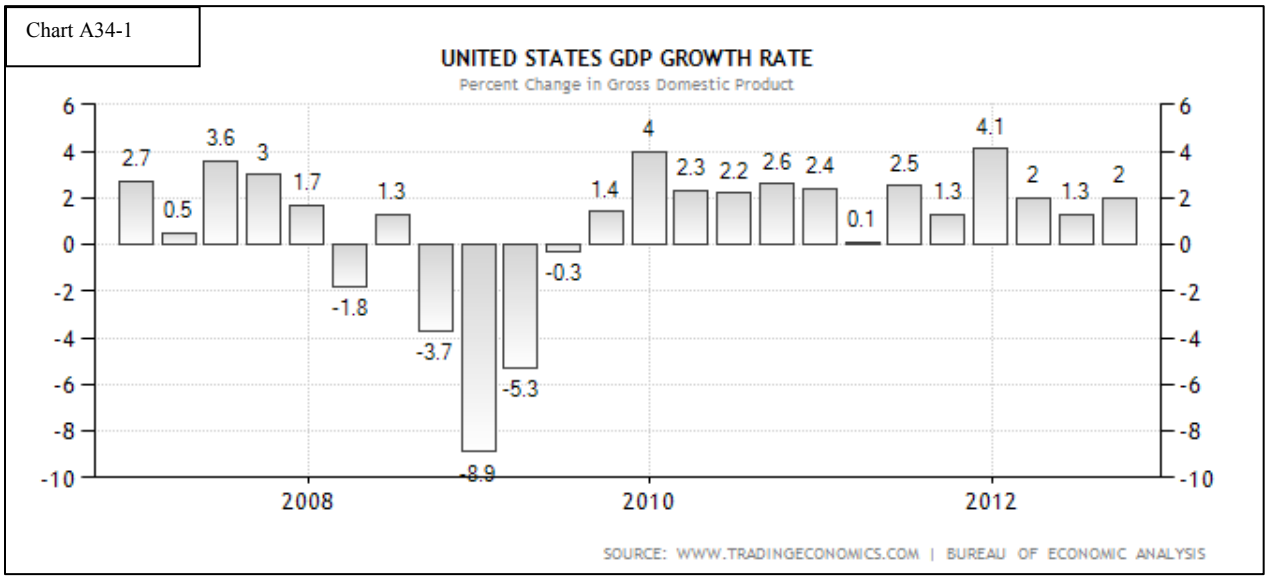



Graph A34-1

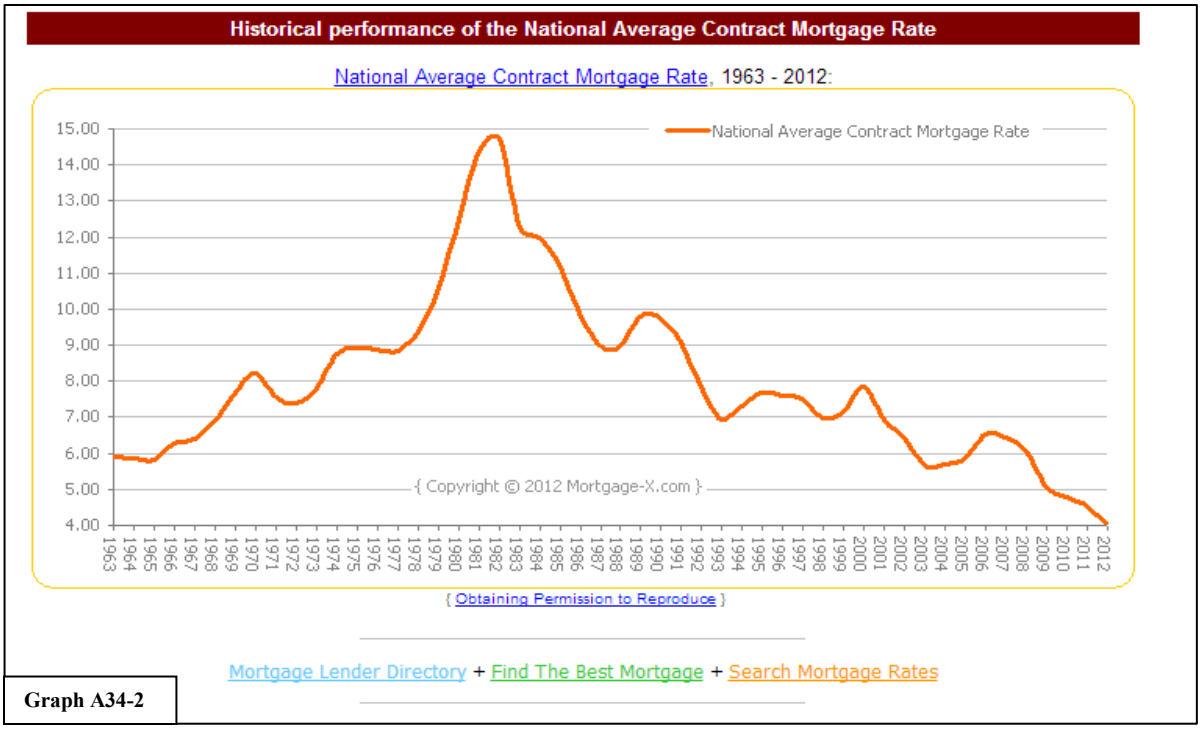
The only other good news in very recent days from the Bureau of Labor Statistics (BLS) is the unemployment rate is finally decreasing to 7.8% (September 2012) from a peak of 10.0% (October 2009)[63], which is being considered a slow recovery. This measure of success is tempered by criticisms of official counts (Titled: U3) being misleading information due to methodology, and less well known alternative methods of measurement indicating contradictory conclusions, as illustrated in **Graph A34-1**.[64] In comparison the State of Washington is currently at 8.6% unemployment rate (August 2012).[65] In addition, claims to unemployment insurance are also decreasing slowly, from over 200K/month (2008-2009) at the peak, to averaging below 135K/month (2011-current).[66] Although GDP was negative after 2008, it has been growing sporadically since 2010 and has averaged above 1% growth from 2010 to 2012, GDP growth in 2012 has been above 2% GDP growth with volatility starting to stabilize.[67]

**Chart A34-1** shows GDP rate since 2007. As these improving trends continue, confidence will grow and the recovery will build speed as the negative volatility of the rest of the financial markets decreases.[68] With a slowly recovering global economy, the bottom line is that apartments are not only the hot topic, but also the only optimistic financial topic in unusual times like these.

Chart A34-1




Interest rates only show more bad news with the FED lowering the rate to 0% and have nowhere left to go. Interest rates have a long history of being used by the FED to control the economy but this clearly does not seem to work as well as they would like. **Chart A34-2** shows interest rates in since 1963.[69]




**Graph A34-2**

## 2. National Foreclosure

Home-ownership trend reversion and foreclosures is the most pertinent demand driver since 2008, because this group is the only one that is imminent, unanticipated and abnormally massive in scale and duration, with direct impact on substantial wealth loss. A mass foreclosure event like this has not been seen since the Great Depression.[70] There were approximately 8 million foreclosures between 2008 and 2011.[71] Although the increased rate of foreclosures started before 2006, this trends growth was too slow to be noticed until 2008. The trend of increasing foreclosures rates started in 2004 moving from well under 1 million nationally towards 2 million. Almost 1 million additional homes per year were reported as becoming vacant between 2005 and 2007. [72] Looking back at 2006 foreclosure was characterized as a subprime issue only and disregarded. A year later news headlines changed to threatening every homeowner security, with the mass of the problem catching everyone by surprise.[73] The Mortgage Bankers Association (MBA) states a 2009 foreclosure figure at 4.6 million, which is more than four times the normal annual rate.[74] They also showed an additional 6 million foreclosures in addition to the normal 1 million per year rate between 2007 and 2009. At the same time, between 2004-2010 the number of renters swelled by 3.9 million, leaving another 6 million potential renters likely arriving soon afterwards (p.17).[75] This makes approximately 9 million or more households nationally that

suddenly increases demand for rental housing and creating a massive shortage in total housing stock, while the foreclosed houses are stuck in court.

The foreclosures that started slowly in 2004 may have finally peaked in early 2012, offer a glimmer of hope that this is the end of the abnormally high foreclosure rate trend.[76] Nationally the wave of foreclosures is receding, with reports of the average number of foreclosures dropping.[77] Reports are also showing housing sales increasing slowly at the national level.[78] RealtyTrac[79] and Zillow[80] have reported the first quarter 2012 national foreclosure rates total at 1.35 million homes, or 1 in every 662 homes (per month), with an average sale price of $176,000. The State of Washington is doing fairly well in comparison to the national average, reporting just fewer than 19,000 foreclosures in March 2012. King County is rated as a "high" rate of foreclosure in comparison to other counties, at 7,000 homes, or one in every 1,236 homes, selling at an average price of $250,000.

**3. National Personal Wealth**

The economic recession had a devastating impact on many Americans personal financial situations to date. Both real income and inflation-adjusted income fell significantly for anyone under 55 years old in this past decade (p.15).[81] Unemployment increased significantly and disproportionately with younger cohorts being most affected.[82] National wealth dropped by 23% on average for everyone simultaneously, between 2007- 2009 (p. 15).[83] Some experienced more severe wealth loss through lower housing values with market depreciation. Many will be pushed into the rental housing markets temporarily, before supply catches up with demand. In addition, the foreclosure crisis has taken a sever toll on many households. Some literature indicates the households that suffered a foreclosure event will take many years to recuperate lost wealth, making this shift to renting permanent for some households (p.15-17).[84]

When surveying attitudes of renters about future home-ownership, the responses have been described as mixed and the lowest scores in generations, as renters are more aware of home-ownership risks. For instance, home equity accounted for 61% of the drop in wealth in the past decade (p.16-18).[85] One issue that is still unclear is whether the apartment market will benefit from a larger or smaller portion of this increase in home-ownership risk aversion than the rest of the rental market.

**4. National Commercial Real Estate**

The commercial real estate industry has its own specific metric as indicators of economic health, as shown in the **Table A34-3**.[86] Development costs are relatively low with the recession still lingering and with no development occurring in property types other than the apartment market as shown in **Appendix A3-5**. The Daily Journal of Commerce (DJC) article from December 2, 2011, states, "Construction spending rose 0.8 percent in October to a seasonally adjusted annual rate of $798.5 billion. While an improvement, that's barely half the $1.5 trillion that economists consider healthy."[87] This lower than healthy rate of construction is keeping costs compressed, which will promote construction. The table titled "Indicative Construction Costs," shows Seattle's construction costs being $120-$235/sqft, as of 1st quarter 2012 by RLB.[88] On the other side of the proforma, are the forecast rents and other incoming cash flows, which must be good, as apartment permits surged 63% in 2011.[89] The brokerage community is buzzing of rumors of up to $3/sqft in asking rents.

KEY UNITED STATES STATISTICS — **Table A34-3**

| | Q2 2011 | Q3 2011 | Q4 2011 | Q1 2012 |
|---|---|---|---|---|
| Gross Domestic Product (GDP) | 1.3% | 1.8% | 2.8% | 2.2% |
| Consumer Price Index (CPI) | 225.7 | 226.9 | 225.7 | 229.4 |
| Inflation | 1.0% | 0.5% | -0.5% | 1.6% |
| Architectural Billings Index (ABI) | 46.3 | 46.9 | 52.0 | 50.4 |
| Construction Put in Place | $772.3 | $787.2 | $816.4 | $808.1 |
| Unemployment | 9.1% | 9.1% | 8.7% | 8.2% |
| Construction Unemployment | 15.6% | 13.3% | 16.0% | 17.2% |

### 5. National Apartment Market

Even now, that recovery has been discussed for over a year there is still great skepticism as the recovery inches forward. The annual update from the Urban Land Institute's Emerging Trends in Real Estate 2012, catch phrase this year is, "Facing a Long Grind: Don't let availability of capital cloud judgments. Demand drivers don't exist, and fundamentals need to catch up." After 82 pages of comprehensively depressing coverage from industry professional surveyed, of all things related to real estate, there is only one topic of optimism. The multifamily markets, specifically apartments, are the sole "cannot miss" opportunity available.

### 6. Other comparative sources

The national housing market context will be differed to Marcus and Millichap[90], which recently discussed the subject of an increase in fees by the FHA.[91]

## Appendix A3-5: Chapter 3 - Construction Cost Chart

**Table 3A2**

USA REPORT

# INDICATIVE CONSTRUCTION COSTS

The data in the chart below represents estimates of current building costs in each respective market. Costs may vary as a consequence of factors such as site conditions, climatic conditions, standards of specification, market conditions, etc. Values represent hard construction costs based on U.S. dollars per square foot of gross floor area.

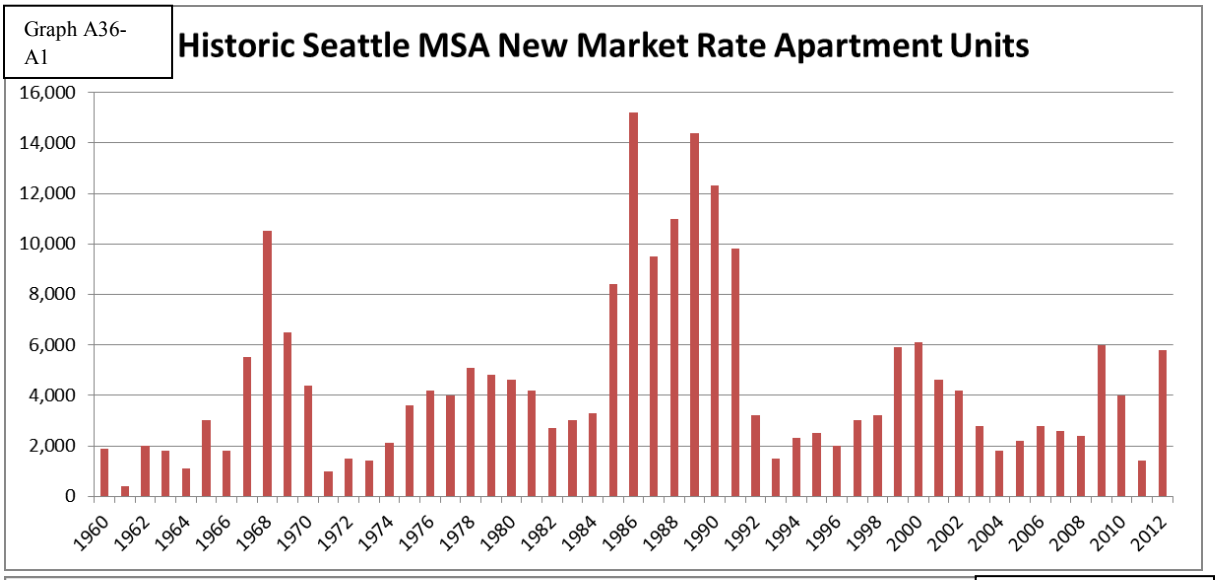
| | OFFICES | | | | RETAIL SHOPPING | | | | HOTELS | | | | HOSPITAL | | INDUSTRIAL | | PARKING | | RESIDENTIAL | | | | EDUCATION | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PRIME | | SECONDARY | | CENTER | | STRIP | | 5 STAR | | 3 STAR | | GENERAL | | WAREHOUSE | | GROUND | | BASEMENT | | MULTIFAMILY | | SINGLE FAMILY | | ELEMENTARY | | HIGH SCHOOL | | UNIVERSITY | |
| LOCATION | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH | LOW | HIGH |
| Boston | 200 | 280 | 175 | 245 | 120 | 210 | 90 | 145 | 250 | 400 | 160 | 250 | 375 | 550 | 70 | 100 | 60 | 90 | 80 | 110 | 135 | 220 | 165 | 325 | 220 | 300 | 240 | 350 | 275 | 400 |
| Denver | 140 | 225 | 100 | 150 | 80 | 130 | 65 | 125 | 185 | 280 | 105 | 165 | 330 | 385 | 65 | 110 | 40 | 70 | 60 | 95 | 70 | 185 | 60 | 350 | 115 | 150 | 140 | 210 | 170 | 285 |
| Honolulu | 210 | 390 | 175 | 290 | 150 | 360 | 120 | 315 | 380 | 550 | 235 | 400 | 345 | 560 | 105 | 165 | 65 | 100 | 100 | 190 | 140 | 325 | 205 | 560 | 245 | 345 | 300 | 450 | 325 | 530 |
| Las Vegas | 140 | 285 | 105 | 190 | 115 | 480 | 65 | 145 | 325 | 465 | 120 | 225 | 285 | 455 | 50 | 100 | 50 | 85 | 60 | 150 | 70 | 400 | 90 | 350 | 180 | 315 | 200 | 455 | 235 | 455 |
| Los Angeles | 180 | 280 | 120 | 195 | 110 | 195 | 80 | 140 | 250 | 390 | 170 | 245 | 350 | 550 | 70 | 120 | 60 | 95 | 85 | 130 | 135 | 215 | 120 | 280 | 250 | 350 | 280 | 410 | 295 | 430 |
| New York | 205 | 350 | 180 | 270 | 140 | 250 | 115 | 160 | 320 | 475 | 185 | 265 | 450 | 600 | 90 | 130 | 65 | 105 | 85 | 125 | 140 | 250 | 175 | 350 | 190 | 340 | 220 | 375 | 275 | 400 |
| Phoenix | 125 | 230 | 100 | 155 | 105 | 165 | 70 | 125 | 210 | 350 | 110 | 160 | 290 | 420 | 55 | 100 | 40 | 65 | 60 | 100 | 80 | 185 | 100 | 300 | 140 | 200 | 170 | 240 | 210 | 375 |
| Portland | 165 | 210 | 115 | 160 | 110 | 195 | 90 | 130 | 175 | 265 | 130 | 170 | 320 | 435 | 75 | 110 | 65 | 85 | 85 | 125 | 110 | 195 | 100 | 250 | 180 | 235 | 190 | 250 | 235 | 340 |
| San Francisco | 195 | 300 | 140 | 220 | 120 | 220 | 110 | 165 | 265 | 410 | 190 | 260 | 360 | 570 | 80 | 130 | 70 | 100 | 90 | 140 | 145 | 230 | 140 | 300 | 260 | 360 | 290 | 420 | 310 | 440 |
| Seattle | 165 | 205 | 115 | 160 | 115 | 200 | 95 | 135 | 185 | 275 | 140 | 180 | 320 | 435 | 75 | 110 | 65 | 85 | 85 | 125 | 120 | 235 | 100 | 235 | 205 | 250 | 230 | 300 | 265 | 395 |
| Washington, DC | 175 | 240 | 130 | 185 | 95 | 190 | 75 | 135 | 230 | 375 | 150 | 230 | 350 | 500 | 70 | 100 | 55 | 80 | 75 | 100 | 100 | 185 | 120 | 250 | 190 | 250 | 220 | 275 | 250 | 375 |

## Appendix A3-6: Inferential Supply Data

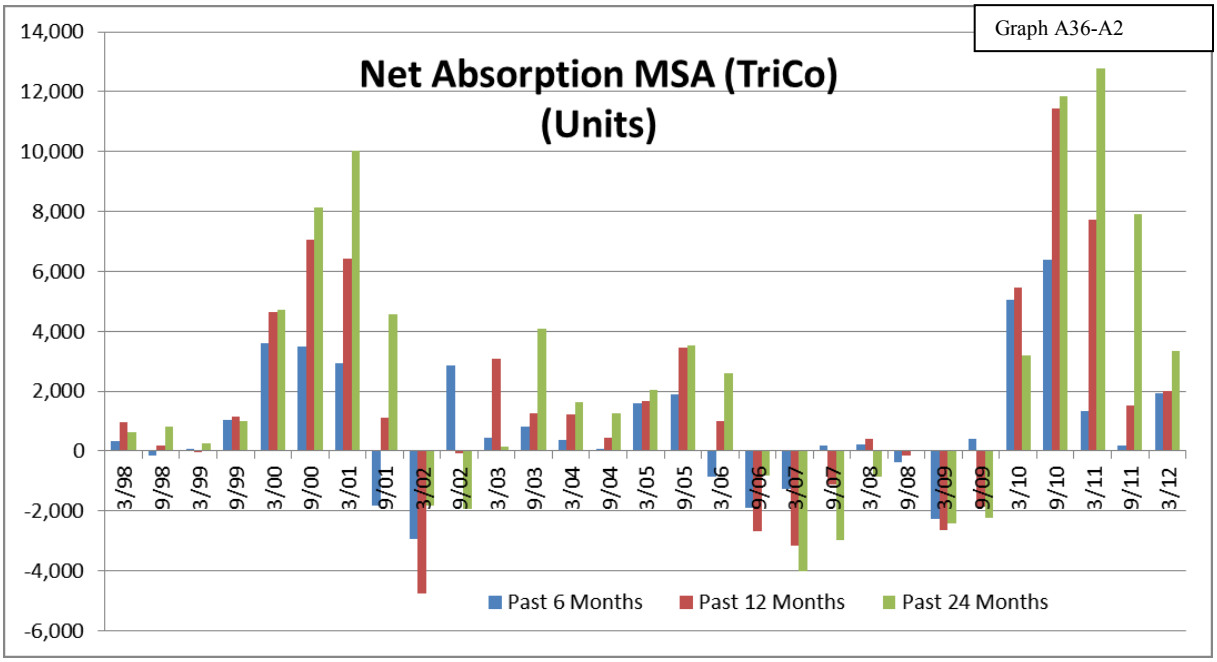
### A. Historic Building Stock Inventory

In addition to establishing a proper count of the building stock, a historical record of annual apartment construction activity is equally important to assess and give context to the currently elevated levels of apartment construction. **Graph A36-A1** illustrates the historic SMSA apartment construction activity from 1960 to present. Notice that the 1980's have the highest levels of apartment construction on record.

Graph A36-A1




Graph A36-A2



A comparison of D&S and Census data is important to understanding the building stock data and will help to create a benchmark for future analysis and comparisons. Starting with the D&S building stock in the SKCA as of 2011, is 552 buildings and 29,483 units, net. **Table A36-A1** shows building stock and development and also shows any other losses or gains, between 1996-2011.

Table A36-A1

| Development History | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| King Central | | | Changes to current stock | | | | | | | | |
| Year | New units | New % stock | Conversions | Demol | Subsid | Reconvert | Total stock change | % change w/in stock | Net Change | Total units | % change w/ new construciton |
| < 1996 | 24,040 | - | 1,046 | 28 | 284 | 0 | -1,358 | | - | 22,682 | |
| 1996 | 204 | 0.91% | 295 | 137 | 23 | 0 | -455 | -2.01% | -251 | 22,431 | -1.11% |
| 1997 | 428 | 1.90% | 255 | 0 | 54 | 0 | -309 | -1.38% | 119 | 22,550 | 0.53% |
| 1998 | 223 | 1.00% | 165 | 248 | 36 | 0 | -449 | -1.99% | -226 | 22,324 | -1.00% |
| 1999 | 519 | 2.28% | 44 | 0 | 30 | 0 | -74 | -0.33% | 445 | **22,769** | 1.99% |
| 2000 | **1,035** | 4.38% | 126 | 0 | 34 | 0 | -160 | -0.70% | **875** | 23,644 | 3.84% |
| 2001 | **1,666** | 6.59% | 28 | 0 | 0 | 0 | -28 | -0.12% | **1,638** | 25,282 | 6.93% |
| 2002 | **960** | 3.66% | 0 | 27 | 0 | 0 | -27 | -0.11% | **933** | 26,215 | 3.69% |
| 2003 | **375** | 1.42% | 219 | 0 | 29 | 0 | -248 | -0.95% | **127** | 26,342 | 0.48% |
| 2004 | **528** | 1.98% | 175 | 0 | 25 | 0 | -200 | -0.76% | **328** | 26,670 | 1.25% |
| 2005 | **550** | 2.08% | 751 | 28 | 0 | 48 | -731 | -2.74% | **-181** | 26,489 | -0.68% |
| 2006 | **606** | 2.33% | 1,052 | 80 | 59 | 62 | -1,129 | -4.26% | **-523** | 25,966 | -1.97% |
| 2007 | **564** | 2.18% | 323 | 260 | 117 | 0 | -700 | -2.70% | **-136** | 25,830 | -0.52% |
| 2008 | **775** | 2.90% | 0 | 26 | 0 | 113 | 87 | 0.34% | **862** | 26,692 | 3.34% |
| 2009 | **1,497** | 5.32% | 0 | 24 | 30 | 0 | -54 | -0.20% | **1,443** | 28,135 | 5.41% |
| 2010 | **970** | 3.35% | 0 | 272 | 0 | 147 | -125 | -0.44% | **845** | 28,980 | 3.00% |
| 2011 | **0** | 0% | 0 | 0 | 0 | 83 | 83 | 0.29% | **83** | 29,063 | 0.29% |
| **10yr Total** | 9,526 | 0 | 2,674 | 717 | 294 | 453 | -3,232 | 0 | 6,294 | 319,308 | |
| **Avearge Change** | 681.25 | **2.64%** | 214.5625 | 68.875 | 27.3125 | 28.3125 | -282.44 | **-1.1289%** | 398.8125 | **1.37%** | **1.86%** |

From a greater perspective, the King County area is dissected into its respective parts shown in Table **A36-A2**. The table shows the new units developed each year. The only constraint is that it does not give total units in any given year, which would be needed to determine if these data points are including other losses/gains like **Table A36-A1** disaggregates.

Table A36-A2

| New Units* by Year (f=forecast) | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pre'OO | 2000 | 2001 | 2002 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012f | 2013f | 2014f | Total |
| **King - North** | 17,698 | 400 | 145 | 407 | 407 | 290 | 36 | 356 | 163 | 319 | 257 | 1,521 | 401 | 21 | 621 | 1,615 | 2,224 | 26,881 |
| **- Central** | 25,309 | 1,036 | 1,641 | 962 | 960 | 375 | 528 | 550 | 606 | 564 | 775 | 1,497 | 970 | | 1,769 | 4,093 | 3,659 | 45,294 |
| **- Eastside** | 34,732 | 1,463 | 1,124 | 477 | 477 | 1,297 | 610 | 345 | 551 | 152 | 513 | 2,047 | 1,840 | 74 | 571 | 763 | 1,160 | 48,196 |
| **- South** | 18,171 | 25 | | 85 | 85 | | | 51 | 58 | | 55 | 329 | | 636 | 470 | 509 | 823 | 21,297 |
| **- Southeast** | 41,457 | 348 | 473 | 561 | 561 | 474 | 282 | 24 | 96 | 376 | | 440 | 428 | 397 | 52 | | 239 | 46,208 |
| **King County Total** | 137,367 | 3,272 | 3,383 | 2,492 | 2,490 | 2,436 | 1,456 | 1,326 | 1,474 | 1,411 | 1,600 | 5,834 | 3,639 | 1,128 | 3,483 | 6,980 | 8,105 | 187,876 |

In comparison, the Census-Bureau has three comparable but difference data points of building stock: 1990 decennial Census, 2000 decennial Census, and 2005-2009 American Communities Surveys (ACS). All three for the SKCA area are summarized in **Table A36-A3.** Comparing formatting and breadth of both D&S and the Census, shows they focus on different things.

Therefore, they could each be a better resource on their specialty. For instance, D&S is more focused on 20+ unit building stock and is the better source for this data: whereas the Census has more accurate data on single family homes (SFH). Comparing the numbers D&S states there is a total stock in 2000 of 23,644 and the Census shows 39,347. The next data point is the ACS, which collected data between 2005 and 2009. D&S 2005 shows 26,489 and in 2009 shows 28,135, compared to the Census ACS 2005-2009 that shows 48,143. These number reveal a difference in 2000 of 16,000 units and in 2005 through 2009 of around 20,000-22,000 units. This represents a discrepancy of approximately 41% across both time periods. Although the D&S estimate is lower than the Census estimate at the SKCA level, these roles are reversed at the MSA level.

| Table A36-A3 | Seattle (KC) Housing Units by Units in Structure | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1990 Census | | 2000 Census | | Annual | 2005-2009 ACS | | |
| | Number | Percent | Number | Percent | Change | Number | Percent | MOE +/- |
| **Total** | 79,626 | 100.00% | 90,700 | 100.00% | 1.31% | 103,103 | 100.00% | 1,509 |
| 1, Detached | 23,808 | 29.90% | 24,443 | 26.90% | 0.26% | 26,130 | 25.30% | 843 |
| 1, Attached | 1,038 | 1.30% | 1,532 | 1.70% | 3.97% | 2,895 | 2.80% | 358 |
| 2 | 3,068 | 3.90% | 2,811 | 3.10% | -0.87% | 2,814 | 2.70% | 397 |
| 3 or 4 | 3,904 | 4.90% | 4,087 | 4.50% | 0.46% | 4,364 | 4.20% | 502 |
| 5 to 9 | 6,032 | 7.60% | 7,041 | 7.80% | 1.56% | 6,747 | 6.50% | 590 |
| 10 to 19 | 10,740 | 13.50% | 11,002 | 12.10% | 0.24% | 11,562 | 11.20% | 737 |
| 20 to 50 | | | 18,421 | 20.30% | 2.83% | 20,724 | 20.10% | 942 |
| 50+ | | | 20,926 | 23.10% | 2.83% | 27,419 | 26.60% | 948 |
| **20+** | **29,758** | **37.40%** | **39,347** | **43.40%** | **5.66%** | **48,143** | **46.70%** | **1,890** |
| Mobile Home | 40 | 0.10% | 80 | 0.10% | 7.18% | 389 | 0.40% | 170 |
| Other | 1,237 | 1.60% | 356 | 0.40% | -11.71% | 57 | 0.10% | 44 |

Getting back to the SKCA level, there is a clear discrepancy that is too large to ignore or work around, and one source must be chosen over the other. A methodological difference could explain how both sources are arriving at such different conclusions. After looking into both of them D&S methodology seems more reliable than the Census for multi-unit complexes.

D&S's methodology is to hire a permanent fulltime industry professional staff to survey other professionals in the industry at an estimated 70-80% of the stock annually. The notable shortcoming I was able to find in there methodology is they were not willing to disclose their source for the estimates of the historical total of the building stock prior to 1981. It is possible

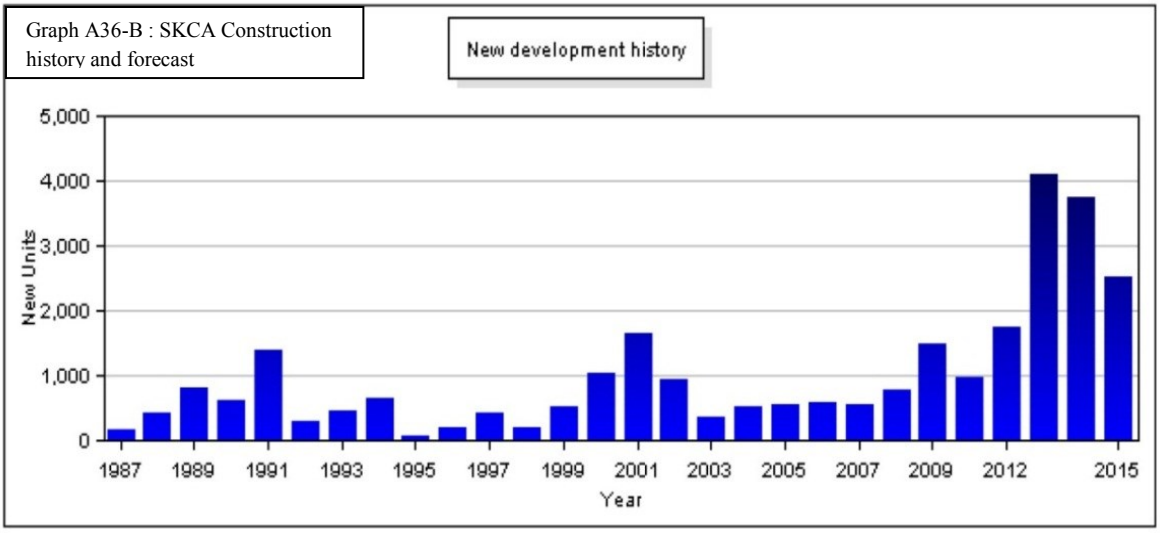
that there are more buildings they are unaware of in the stock and have under estimated the stock size. This concept does not hold at the MSA level, as D&S count is higher than the Census.

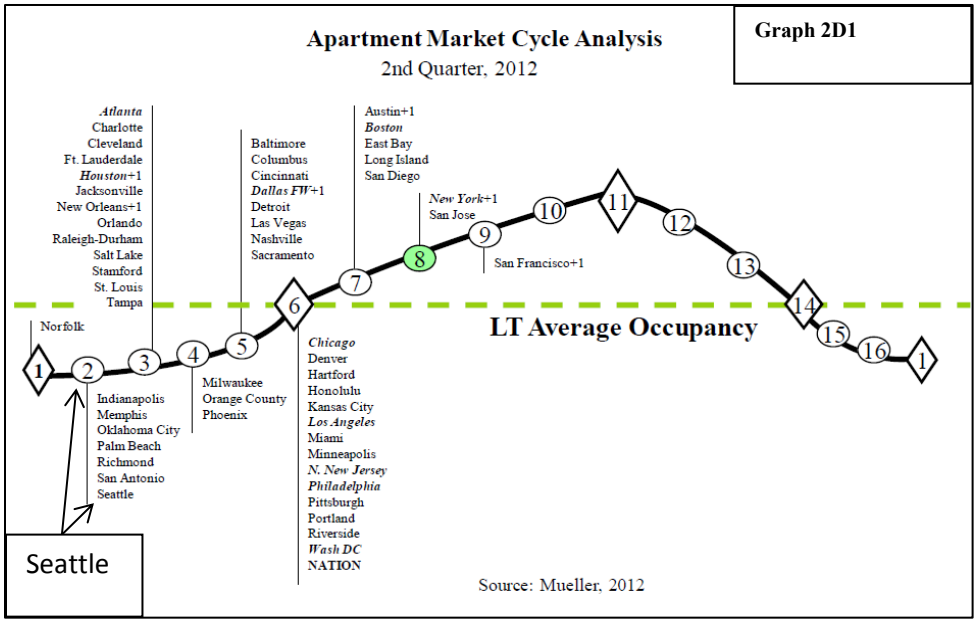
In comparison to the D&S methodology, the Census-Bureau hires temporary part-time, non-industry semi-professional staff, to survey average citizens (non-industry professional), at an annual 3 million housing units (HU) nationally, as described in chapter 4 of the ACS Design and Methodology guide issued April 2009.[92] Although this guide goes into great depth of its complicated methodology, it does not put any of its figures into perspective. The end result is that 3 million HU's are being surveyed, but they do not state the total number or the percentage of the stock for comparison. There are approximately 308 million people in the United States in the 2010 Census and an average household (HH) size of 2.7, and then the 3M represents a slightly less than 2.5% sample size every year, over 5 years. The previously used "Long Form" sample size is similar in that it is also a small percentage of the total. For all of these reasons D&S is being selected over the Census for the SKCA area.

**B. Building Stock Inventory Forecast**

The SKCA building stock 2014 development forecasts is projected to total 646 Buildings and 38,739 Units, net. By 2015, the forecast is 41,272 units and is still a historically significant increase. This data doesn't take into consideration any losses. In comparison, **Graph A36-B** starts with the total units stock in 1996 and then shows the amount of net unit stock gains and losses every year.

Graph A36-B : SKCA Construction history and forecast






## C. Historic Vacancy / Occupancy

Table A36-C1

| King Central 2000-2007 | All | Studio | 1 Bed | 2/1 ba | 2/2 ba | 3/2 ba |
|---|---|---|---|---|---|---|
| Market Vacancy | 3.30% | 4.10% | 2.80% | 1.60% | 3.60% | 2.00% |
| Actual Rent ($) | $1,537 | $1,136 | $1,487 | $1,615 | $2,050 | $2,844 |
| Act. rent NRSF | $2.01 | $2.15 | $2.01 | $1.72 | $1.94 | $2.19 |
| Bldgs/Units Svyed | 43/4,511 | 37/1,268 | 42/1,990 | 14/187 | 35/918 | Oct-49 |
| **2008 & Newer** | | | | | | |
| Market Vacancy | 4.80% | 3.50% | 6.10% | 3.70% | 4.00% | 7.70% |
| Actual Rent ($) | $1,832 | $1,205 | $1,721 | $2,204 | $2,597 | $4,903 |
| Act. rent NRSF | $2.27 | $2.34 | $2.25 | $2.50 | $2.18 | $2.74 |
| Bldgs/Units Svyed | 26/3,166 | 21/714 | 26/1,478 | 13/248 | 21/574 | 3/13 |

Vacancy is often the lead indicator that developers look at to determine which submarket to pursue development. To help organize the vacancy figures in a more intuitive perspective, 8% is the equivalent of 1 month of the year, which is a normal turnaround time between tenants for many property management companies. Asset managers prefer to keep vacancy rates closer to 6%, which is possible if most tenants don't move every year. Asset managers consider the market to be tight when the vacancy rate drops below 4% and this is when developers start to take interest. **Table A36-C1** shows all buildings in the Seattle King Central Area by property type; with the 5year, average is 4.1%. The March 2012 average is 3.1% and trending down or

holding stable, from a high of 6.4% in March of 2009. These low vacancy rates will peak the interest of apartment developers and they will start to research the feasibility of building new product by researching other indicator data about the submarket of interests. The same data charts are available for King North, which is occasionally combined with King Central for Investment purposes.

Table A36-C2

| King North 2000-2007 | All | Studio | 1 Bed | 2/1 ba | 2/2 ba | 3/2 ba |
|---|---|---|---|---|---|---|
| Market Vacancy | 2.80% | 3.40% | 2.80% | 2.40% | 2.80% | 3.00% |
| Actual Rent ($) | $1,203 | $943 | $1,123 | $1,333 | $1,432 | $1,562 |
| Act. rent NRSF | $1.61 | $1.90 | $1.70 | $1.58 | $1.45 | $1.35 |
| Bldgs/Units Svyed | 26/1,704 | 19/268 | 26/829 | 16/123 | 22/400 | Jun-67 |
| **2008 & Newer** | | | | | | |
| Market Vacancy | 4.70% | 4.90% | 4.10% | 4.50% | 4.20% | 3.80% |
| Actual Rent ($) | $1,417 | $1,098 | $1,355 | $1,524 | $1,960 | $1,785 |
| Act. rent NRSF | $1.88 | $2.05 | $1.91 | $1.70 | $1.83 | $1.41 |
| Bldgs/Units Svyed | 18/2,196 | 16/467 | 18/1,144 | 11/201 | 15/309 | 26-Apr |

**Table A36-C3** shows the detailed vacancy rates for Seattle King Central Area in a net absorption format in 6-month intervals. This table shows a more intricate or nuanced breakdown of market vacancy rates from a development perspective.

Table A36-C3

| Absorption Seattle (KC) Six Months Ending | 3/07 | 9/07 | 3/08 | 9/08 | 3/09 | 9/09 | 3/10 | 9/10 | 3/11 | 9/11 | 3/12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Existing Apartments | 25,801 | 25,766 | 25,768 | 25,854 | 26,418 | 26,858 | 27,590 | 28,715 | 29,004 | 29,087 | 29,087 |
| Plus: New Units Opened | 338 | 442 | 122 | 524 | 393 | 786 | 978 | 561 | | | 358 |
| Less: Condo Conversions | 240 | 163 | 36 | | | | | | | | |
| Plus:Condo/Sub Re-Conversions | | | | 40 | 73 | | 147 | | 83 | | 39 |
| Less: Demos/Removals | 100 | 277 | | | 26 | 54 | | 272 | | | |
| Plus: Other Adjustments | | | | | | | | | | | |
| Total | 25,799 | 25,768 | 25,854 | 26,418 | 26,858 | 27,590 | 28,715 | 29,004 | 29,087 | 29,087 | 29,484 |
| Apartments Not In Lease-up | 25,289 | 25,263 | 25,313 | 25,854 | 25,867 | 26,371 | 26,961 | 27,866 | 28,561 | 28,675 | 29,058 |
| Apartments In Lease-up | 510 | 505 | 541 | 564 | 991 | 1,219 | 1,754 | 1,138 | 526 | 412 | 426 |
| Occupancy Rate: Existing | 96.40% | 96.70% | 96.40% | 96.50% | 93.60% | 94.40% | 95.00% | 96.40% | 96.40% | 96.50% | 96.90% |
| New | 71.70% | 71.60% | 76.50% | 69.70% | 59.40% | 52.00% | 55.70% | 77.40% | 50.30% | 78.90% | 46.30% |
| Market Occupancy Rate | 96.40% | 96.70% | 96.40% | 96.50% | 93.60% | 94.40% | 95.00% | 96.40% | 96.40% | 96.50% | 96.90% |
| Gross Occupancy Rate | 95.90% | 96.20% | 96.00% | 95.90% | 92.30% | 92.50% | 92.60% | 95.70% | 95.60% | 96.30% | 96.20% |
| Occupied Units (See Notes) | 24,903 | 24,898 | 24,839 | 25,342 | 24,800 | 25,528 | 26,590 | 27,744 | 27,797 | 27,996 | 28,354 |

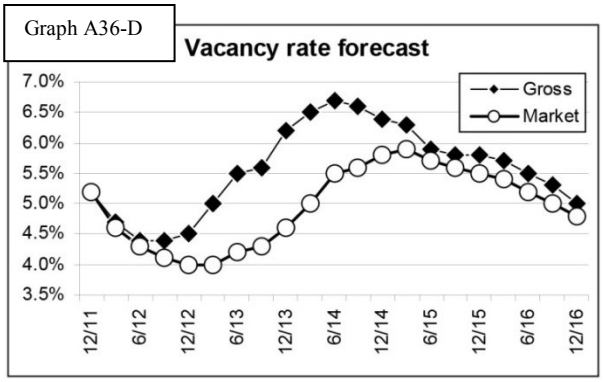
More often county level data is aggregated from individual level and then aggregated again to MSA level data for investment purposes. The Tri-County MSA individual county level data is below.

Table A36-C4

| King County | | | | | | |
|---|---|---|---|---|---|---|
| **2000-2007** | **All** | **Studio** | **1 Bed** | **2/1 ba** | **2/2 ba** | **3/2 ba** |
| Market Vacancy | 3.8% | 4.5% | 3.5% | 3.4% | 4.1% | 3.6% |
| Actual Rent ($) | $1,383 | $1,051 | $1,294 | $1,329 | $1,573 | $1,708 |
| Act. rent NRSF | $1.57 | $2.00 | $1.75 | $1.44 | $1.42 | $1.29 |
| Bldgs Svyed | 124 | 78 | 118 | 57 | 110 | 48 |
| Units Svyed | 14136 | 2385 | 5127 | 911 | 4633 | 853 |
| **2008 & Newer** | | | | | | |
| Market Vacancy | 4.8% | 4.0% | 5.0% | 4.4% | 5.1% | 4.0% |
| Actual Rent ($) | $1,624 | $1,128 | $1,506 | $1,812 | $2,101 | $2,275 |
| Act. rent NRSF | $1.88 | $2.09 | $1.93 | $2.01 | $1.76 | $1.52 |
| Bldgs Svyed | 81 | 62 | 77 | 44 | 72 | 17 |
| Units Svyed | 12350 | 2331 | 5726 | 896 | 2823 | 327 |
| | | | | | | |
| **Pierce County** | | | | | | |
| **2000-2007** | **All** | **Studio** | **1 Bed** | **2/1 ba** | **2/2 ba** | **3/2 ba** |
| Market Vacancy | 6.6% | 6.1% | 6.4% | 5.5% | 7.3% | 6.3% |
| Actual Rent ($) | $1,063 | $814 | $907 | $1,002 | $119 | $1,348 |
| Act. rent NRSF | $1.10 | $1.53 | $1.25 | $1.06 | $1.05 | $1.00 |
| Bldgs Svyed | 43 | 10 | 35 | 24 | 39 | 23 |
| Units Svyed | 5144 | 228 | 1462 | 712 | 2001 | 671 |
| **2008 & Newer** | | | | | | |
| **Market Vacancy** | 5.4% | 4.0% | 5.7% | 6.3% | 6.3% | 2.4% |
| Actual Rent ($) | $1,047 | $740 | $960 | $1,010 | $1,103 | $1,427 |
| Act. rent NRSF | $1.20 | $1.56 | $1.35 | $1.26 | $1.08 | $1.12 |
| Bldgs Svyed | 8 | 3 | 6 | 4 | 8 | 6 |
| Units Svyed | 881 | 100 | 235 | 117 | 327 | 94 |
| | | | | | | |
| **Snohomish County** | | | | | | |
| **2000-2007** | **All** | **Studio** | **1 Bed** | **2/1 ba** | **2/2 ba** | **3/2 ba** |
| Market Vacancy | 4.3% | 8.8% | 3.8% | 7.0% | 4.4% | 2.3% |
| Actual Rent ($) | $1,126 | $640 | $960 | $1,053 | $1,210 | $1,472 |
| Act. rent NRSF | $1.14 | $1.21 | $1.27 | $1.11 | $1.09 | $1.10 |
| Bldgs Svyed | 25 | 5 | 20 | 11 | 24 | 15 |
| Units Svyed | 4002 | 102 | 1428 | 343 | 1643 | 472 |
| **2008 & Newer** | | | | | | |
| Market Vacancy | 5.4% | 20.0% | 2.1% | 13.7% | 7.4% | 3.2% |
| Actual Rent ($) | $1,233 | $1,017 | $1,103 | $1,262 | $1,521 | $1,319 |
| Act. rent NRSF | $1.37 | $1.67 | $1.50 | $1.40 | $1.34 | $1.08 |
| Bldgs Svyed | 6 | 2 | 4 | 5 | 5 | 4 |
| Units Svyed | 590 | 86 | 217 | 67 | 118 | 94 |

## D. Vacancy / Occupancy Forecast

Graph A36-D




As discussed previously in the SKCA vacancy section, above, the average vacancy rate in SKCA is 4.8%. The best performing units (i.e., that have the lowest vacancy rates) are that studios, which average 3.5% vacancy rate, and 2bed/2bath, which average a 4.0% vacancy rate. The forecasted vacancy rates by D&S from December of 2011 are shown in **Graph A36-D**. Although they are anticipated to climb, these rates seem conservatively optimistic, comparatively to the results of the research model discussed in detail later.

Table A36-D

| | Development History | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Changes to current stock | | | | | | | |
| Year | New units | New % stock | Conversions | Demol | Subsid | Reconvert | Total stock change | % change w/in stock | Net Change | Total units |
| 2010 | 970 | 3.35% | 0 | 272 | 0 | 147 | -125 | -0.43% | 845 | 28,980 |
| 2011 | 0 | 0% | 0 | 0 | 0 | 83 | 83 | 0.27% | 83 | 29,063 |
| 2012 | 1,769 | 5.73% | 0 | 0 | 0 | 39 | 39 | 0.11% | 1,808 | 30,871 |
| 2013 | 4,112 | 11.75% | 0 | 0 | 0 | 0 | 0 | 0.00% | 4,112 | 34,983 |
| 2014 | 3,756 | 9.70% | 0 | 0 | 0 | 0 | 0 | 0.00% | 3,756 | 38,739 |
| 2015 | 2,533 | 6.14% | 0 | 0 | 0 | 0 | 0 | 0.00% | 2,533 | 41,272 |
| 2016 | 2200 | 0% | 0 | 0 | 0 | 0 | 0 | 0.00% | 2200 | 43,472 |
| 2017 | 0 | 0% | 0 | 0 | 0 | 0 | 0 | 0.00% | 0 | 43,472 |

## E. Historic Net Absorption

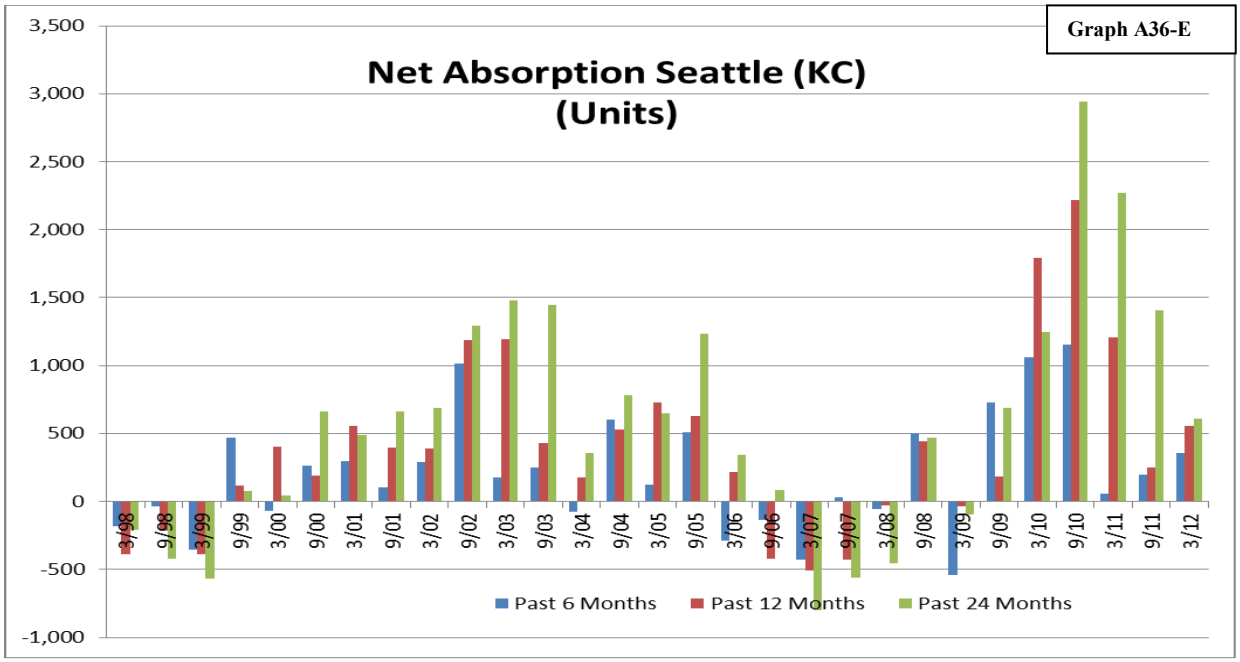
The D&S absorption method and calculations for the SKCA area are shown in **Table A36-E** in 6-month increments at the top of the table; with the final net absorption figures highlighted in the bottom three rows. The net absorption is calculated in three different time periods; 6 months, 1 year, and 2 years.

Absorption Seattle (KC) — Table A36-E

| Six Months Ending | 3/07 | 9/07 | 3/08 | 9/08 | 3/09 | 9/09 | 3/10 | 9/10 | 3/11 | 9/11 | 3/12 | 9/12 | 3/13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Absorption: | | | | | | | | | | | | | |
| Past 6 Months | -425 | 28 | -59 | 503 | -542 | 728 | 1,062 | 1,154 | 54 | 199 | 358 | 559 | 1178 |
| Past 12 Months | -511 | -429 | -31 | 444 | -39 | 186 | 1,790 | 2,216 | 1,207 | 253 | 557 | 917 | 1563 |
| Past 24 Months | -798 | -562 | -456 | 472 | -98 | 689 | 1,248 | 2,944 | 2,269 | 1,407 | 611 | 1,116 | 1,921 |

This gives differing perspectives to more fully articulate the context and impact on the market. **Graph A36-E** also shows the same net absorption data for the last 14 years, to give a quick visual representation. As mentioned in the literature review, the national rate of long-term

population growth is approximately 1%. The SKCA shows a 1.65% rate of annualized growth, in units, in the last 14 years. This shows that the SKCA apartment market is growing faster than the national average population growth. The average net absorption in any 1year time period is 393 units, with a standard deviation of 653. The likely maximum limit is 1046 and the low is -261. The full table from 1998-2012 is in **Appendix A3-7**.

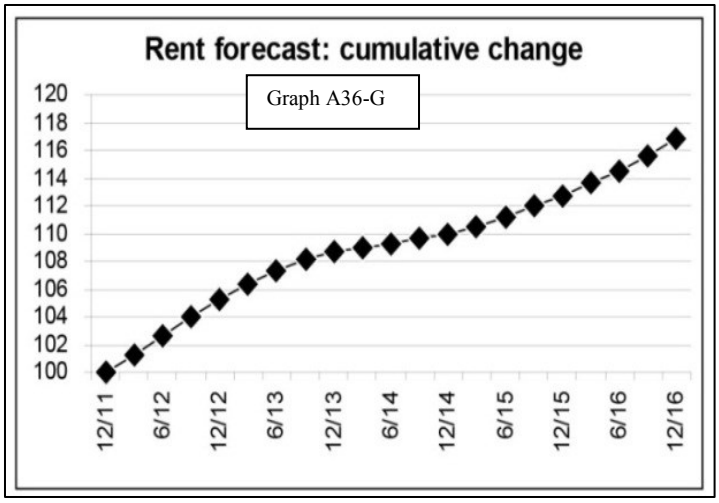



## F. Historic Rent

The second indicator that developers will look at is value of rental rates and its growth trends. The amounts must support the cost of new development and the trends needs to be increasing. The trend of the rents is partially influenced by demand fundamentals, like demographics and partially influenced by economic markets. All of the buildings in the Seattle King Central Area (SKCA) area for the past 5years average $1,199/month and growth is trending at +1.9% annually. In March 2012, the average is $1,272/month and trending upward steadily at +3.5% annually, which is passing pre-recessionary levels of $1,230/month. The tables above in the previous "Vacancy" section tables, above; all have detailed rent rate data for King Central, King North and King County.

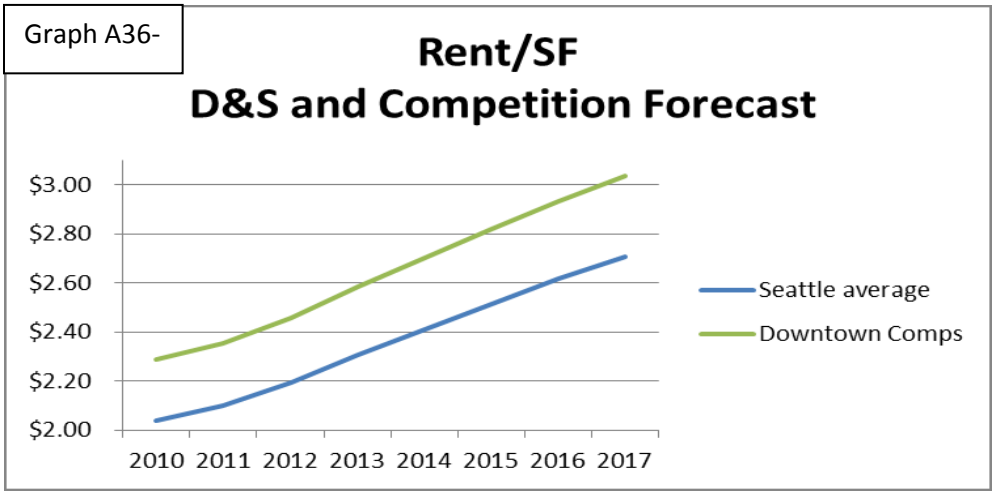
## G. Rent Forecast

Buildings developed between 2008 and 2011 average $1,832 rent/month, and trending at 3.5% growth. D&S has forecast the average rates through 2016 in the **Graph A36-G**. The left side, vertical, X-axis represents the percentage of change, stating with the end of 2011 with 100% and increasing every year after that. If this graphs growth rates are then applied to the different types of units, then studios charge the most/sqft, at $2.34/NRSF. They will rent for $1,205/month. One bedrooms will be $1,721, @ 2.25/nrsf. Two bedroom/1bath will be $2,204, @ 2.50/nrsf, 2bd/2bth will be $2,597, @ 2.18/nrsf, and finally 3bd/2bth will be $4,903, @ 2.74/nrsf. Also, notice the slow do in 2014, which is similar to what this thesis research model anticipates in 2015 and will be described in greater detail in the analysis section.




## H. Comparable Property Data (Comps)

The City of Seattle and D&S track the number of building permits issued and it is currently a record number of permits in the pipeline, as shown in **Graph A36-H**, below. As mentioned in the literature review, the last time that apartment permits requests were this high was prior to 1985 according to nationally aggregated permit data.



A full list is of projects being developed in SKCA is in **Appendix A3-8**. One example of a comparable new development group is Sustainable Living Initiative (SLI), and is anticipating their development in the University District of Seattle (King North) to go for approximately $1,800/month per unit, or $3/sqft, when completed in 2015.[93] This is a relatively high rental rate for its location, but SLI believes they have a superior product due to their "patent pending, unconventional construction process and higher quality product." Ultimately, the question becomes where is the top of each submarket today and where will it be in 2015? A list of comps for the downtown Seattle area inside D&S's SKCA have been compiled to give a sample of what the top of the market looks like today, in **Table A36-H**. This list was compiled in 2011. Using the D&S forecast growth rates this quickly brings this sample group of comp's to close to $2.9/sqft by 2015 in **Graph A36-H**, below. There are a few that are well over the $3/sqft benchmark by 2016, particularly in the SKCA. Given some new properties in South Lake Union that are not listed in these comp's, that command higher rental rates than some of the listed properties, it is very possible that the new top of the market will be well over $3/sqft.

Table A36-H

**Downtown Seattle Comps**

| Apartment Bldg. Name | Units | SF/ Unit | Rent /Mth | $/SF |
|---|---|---|---|---|
| **Sydney** | 128 | 813 | $1,731 | $ 2.13 |
| **Cairns** | 100 | 741 | $1,321 | $ 1.78 |
| **Amli 535** | 199 | 797 | $1,603 | $ 2.01 |
| **Carbon 56** | 55 | 747 | $1,359 | $ 1.82 |
| **Tobira** | 88 | 641 | $996 | $ 2.13 |
| **Centennial Court** | 187 | 574 | $1,039 | $ 1.81 |
| **Fairmont Apt** | 24 | 732 | $1,333 | $ 2.01 |
| **Cobb Building** | 92 | 2,252 | $6,512 | $ 2.89 |
| **Atwood Apartments** | 55 | 750 | $1,581 | $ 2.11 |
| **Post Alley Court** | 59 | 508 | $1,180 | $ 2.32 |
| **Harber Steps** | 305 | 3,771 | $7,615 | $ 2.02 |
| **Tower 801** | 173 | 701 | $1,495 | $ 2.13 |
| **Olivian** | 224 | 1,215 | $4,678 | $ 3.85 |
| **Aspira** | 326 | 896 | $2,497 | $ 2.79 |
| **Metropolitan Tower** | 366 | 964 | $2,404 | $ 2.49 |
| **Average** | **159** | **1,271** | $2,999 | **$ 2.29** |

## I. Historic Concessions/Incentives

Concessions are likely to be the third indicator that a developer will look at before making a decision to proceed into more market research, property title searches or structuring the finances. Concessions are difficult to assess for a variety of reasons, which is why this data needs to be taken lightly. Regardless, it does have a very real impact on the bottom line and needs to be taken into consideration. D&S's annual vacancy report breaks down the concessions, or "Incentives," by percentage offering incentives and average monetary value of incentives. For all buildings in the SKCA, the 5-year average is $859/month, with 22% of managers offering this kind of incentive. The most recent release of this data in March 2012 shows the average is

$595/month, offered by 6% of managers. The trend may have reached optimally low level, and D&S most recent release of the Apartment Advisor report forecasts that concessions will rise, between 2012 and 2015, to peak at a -2% decrease in effective gross income (EGI) for the region. This is bound to be lower in the King Central area as **Table A36-I** (King-Central History), below, is already indicating a strong pattern of relatively lower percentage offering incentives.

**Table A36-I**

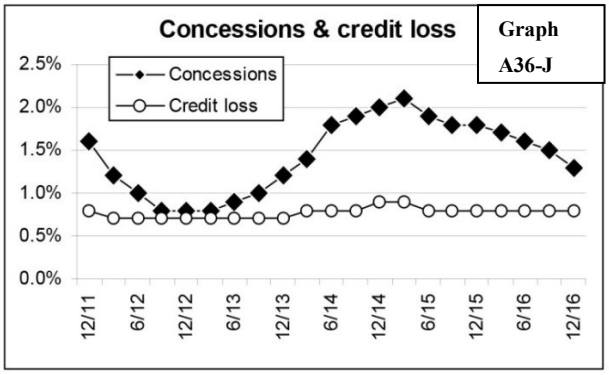
| King-Central History | Sep-07 | Mar-08 | Sep-08 | Mar-09 | Sep-09 | Mar-10 | Sep-10 | Mar-11 | Sep-11 | Mar-12 | 5 Yr Avg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Market Vacancy % | 3.30% | 3.60% | 3.50% | 6.40% | 5.60% | 5.00% | 3.60% | 3.60% | 3.50% | 3.10% | 4.10% |
| Average Rent | $1,169 | $1,173 | $1,230 | $1,190 | $1,177 | $1,151 | $1,180 | $1,192 | $1,254 | $1,272 | $1,199 |
| % Offering Incentives | 3% | 8% | 7% | 43% | 52% | 55% | 24% | 14% | 6% | 6% | 22% |
| Average $ Incentive | $800 | $1,125 | $1,111 | $829 | $863 | $874 | $795 | $900 | $698 | $595 | $859 |
| Proj. Average Rent Change | 4.00% | 3.60% | 3.20% | -1.90% | -0.80% | -0.80% | 1.90% | 2.60% | 3.60% | 3.50% | 1.90% |
| New Units | 419 | 122 | 524 | 391 | 787 | 979 | 561 | 0 | 0 | 358 | 414 |

| King-North History | Sep-07 | Mar-08 | Sep-08 | Mar-09 | Sep-09 | Mar-10 | Sep-10 | Mar-11 | Sep-11 | Mar-12 | 5 Yr Avg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Market Vacancy % | 2.60% | 2.40% | 2.90% | 4.60% | 6.90% | 5.80% | 3.90% | 3.60% | 3.50% | 3.10% | 3.90% |
| Average Rent | $918 | $952 | $984 | $1,020 | $1,005 | $991 | $1,002 | $1,010 | $1,030 | $1,038 | $995 |
| % Offering Incentives | 3% | 6% | 5% | 39% | 56% | 63% | 28% | 22% | 8% | 7% | 24% |
| Average $ Incentive | $350 | $773 | $221 | $731 | $743 | $793 | $649 | $690 | $636 | $527 | $611 |
| Proj. Average Rent Change | 4.50% | 4.00% | 2.90% | -1.10% | -0.70% | -0.80% | 1.20% | 2.20% | 3.00% | 3.50% | 1.90% |
| New Units | 196 | 36 | 225 | 748 | 743 | 30 | 401 | 0 | 21 | 0 | 240 |

| King County History | Sep-07 | Mar-08 | Sep-08 | Mar-09 | Sep-09 | Mar-10 | Sep-10 | Mar-11 | Sep-11 | Mar-12 | 5 Yr Avg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Market Vacancy % | 3.80% | 4.10% | 4.80% | 6.80% | 6.70% | 6.00% | 4.90% | 4.30% | 4.70% | 4.10% | 5.00% |
| Average Rent | $1,001 | $1,026 | $1,078 | $1,065 | $1,033 | $1,017 | $1,033 | $1,049 | $1,086 | $1,098 | $1,049 |
| % Offering Incentives | 8% | 10% | 14% | 48% | 60% | 62% | 37% | 28% | 19% | 18% | 30% |
| Average $ Incentive | $665 | $925 | $747 | $823 | $826 | $781 | $715 | $664 | $603 | $487 | $724 |
| Proj. Average Rent Change | 3.90% | 3.70% | 2.70% | -1.10% | -0.60% | -0.40% | 1.40% | 2.50% | 3.00% | 3.20% | 1.80% |
| New Units | 795 | 476 | 1,194 | 1,379 | 2,907 | 2,545 | 2,634 | 422 | 838 | 611 | 1,380 |

## J. Concessions/Incentives

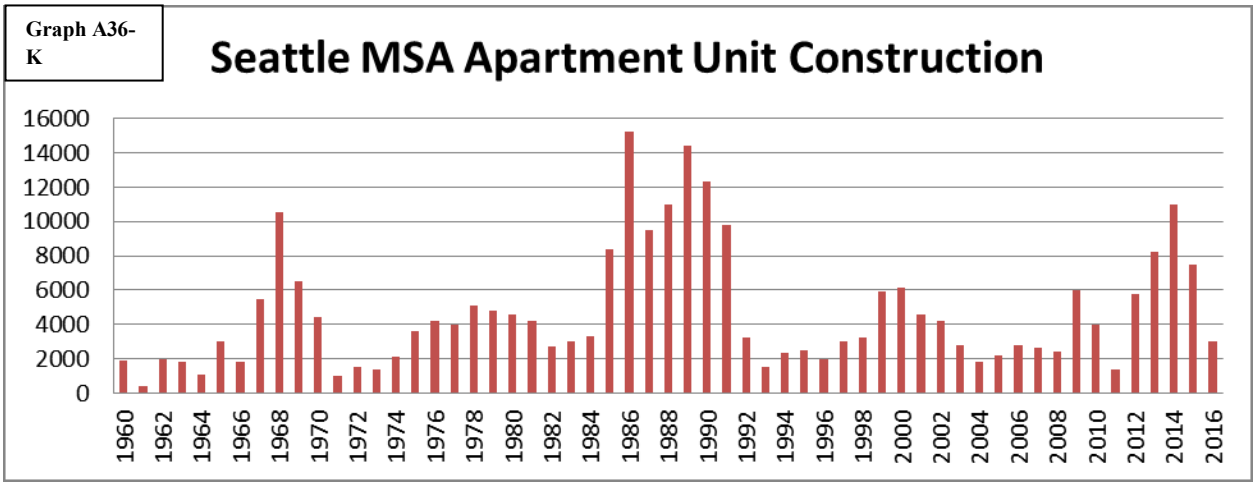
Concessions have been dropping for the last two years as the economy has staggered and foreclosures continue at record high levels. As things improve, D&S anticipate concessions and credit loss to start increasing in late 2013, as shown in **Graph A36-J**. This is a regional forecast and not directly applicable to the SKCA. The forecast does stipulate that city centers will have more demand, causing concessions to be lower than the regional average. This forecast peaks concession in 2015, with is closer to the research models timing than vacancies and rental rates, but still a still a little sooner.



## K. Net Absorption

In 2011 Seattle's building supply was 29,063 and by 2016 it will be 43,472, increasing by 14,409. With a maximum limit for vacancy rates of approximately 10% by 2016 this will equate to 39,125 occupied units. This implies developers are anticipating a minimum of 11,775 units or households of demand increases for the SKCA apartment market. This implies that investor and property managers should expect only 4,347 vacant units.

Graph A36-K




## L. Sources and Limitations of Supply

The apartment supply analysis is primarily based on Dupre and Scott Apartment Advisors (D&S) data and secondarily on Census-Bureau data. Although the Census offers greater breadth, D&S offers greater depth. Portions of this section will make comparisons between the Census and D&S, when necessary. D&S has proven to be a more comprehensive and consistent source of data than the Census-Bureau for this particular type of building stock information. Starting with the Seattle King Central Area (SKCA) historical data and forecast. The focus will be to use D&S data to assess the new construction pipeline data for our target area, as represented in **MAP 3A4**, in Chapter 3.

The SKCA area is a development oriented geographic delineation, created by D&S, which suites the purposes of this thesis research the best out of all available data sources. This development perspective requires an intimate knowledge of the local area development history, growth patterns, investor history, behavior patterns, etc. After acquiring experience in the SMSA market this perspective becomes intuitive, but for any newcomer this perspective maybe confusing because of Seattle unique non-centralized neighborhood historic growth pattern. D&S apartment market data is separated into three sizes; small, medium, and large. Any buildings under 20 units

are considered “small.” The “medium” size is between 20-100 units per building. Both D&S and the Census use similar size definitions, which are compatible with each other. The “large” size is anything more than 100 units per building. Although D&S does survey, track and release an annual report on the small units count, the report is missing many of the metrics necessary to get a comprehensive view of the small size building stock of the total supply. Only the medium and large have a comprehensive set of metrics available.

# Appendix A3-7: SKCA Net Absorption 98-2012

**Absorption Seattle (KC)**

| Six Months Ending | 3/98 | 9/98 | 3/99 | 9/99 | 3/00 | 9/00 | 3/01 | 9/01 | 3/02 | 9/02 | 3/03 | 9/03 | 3/04 | 9/04 | 3/05 | 9/05 | 3/06 | 9/06 | 3/07 | 9/07 | 3/08 | 9/08 | 3/09 | 9/09 | 3/10 | 9/10 | 3/11 | 9/11 | 3/12 | 9/12 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Existing Apartments** | 22,728 | 22,653 | 22,548 | 22,477 | 22,852 | 22,974 | 23,171 | 23,952 | 24,811 | 25,260 | 25,933 | 26,085 | 25,944 | 26,062 | 26,408 | 26,328 | 26,183 | 26,061 | 25,801 | 25,766 | 25,768 | 25,854 | 26,418 | 26,858 | 27,590 | 28,715 | 29,004 | 29,087 | 29,087 | 29,484 | |
| **Plus: New Units Opened** | | 132 | 96 | 395 | 250 | 253 | 781 | 932 | 703 | 674 | 181 | 78 | 560 | 468 | 44 | 352 | 154 | 369 | 338 | 442 | 122 | 524 | 393 | 786 | 978 | 561 | | | 358 | 513 | |
| **Less: Condo Conversions** | | 75 | 54 | 36 | 20 | 128 | 22 | | 28 | | | 219 | 53 | 122 | 72 | 497 | 324 | 887 | 240 | 163 | 36 | | | | | | | | | | |
| **Plus:Condo/Sub Re-Conversions** | | | | | | | | | | | | | | | | | | | | | | 40 | 73 | | 147 | | 83 | | 39 | | |
| **Less: Demos/Removals** | | 147 | 101 | | | | | | | 51 | 29 | | 89 | | 52 | | | 139 | 100 | 277 | | | 26 | 54 | | 272 | | | | | |
| **Plus: Other Adjustments** | | -36 | -30 | | | -34 | | -45 | | 50 | | | | | | | 48 | 26 | | | | | | | | | | | | | |
| **Total** | 22,653 | 22,548 | 22,477 | 22,852 | 22,974 | 23,171 | 23,952 | 24,811 | 25,514 | 25,933 | 26,085 | 25,944 | 26,062 | 26,408 | 26,328 | 26,183 | 26,061 | 25,430 | 25,799 | 25,768 | 25,854 | 26,418 | 26,858 | 27,590 | 28,715 | 29,004 | 29,087 | 29,087 | 29,484 | 29,484 | 1.65% |
| **Apartments Not In Lease-up** | 22,653 | 22,081 | 21,774 | 22,457 | 22,215 | 22,582 | 22,962 | 23,160 | 24,200 | 25,119 | 25,439 | 25,866 | 25,802 | 25,715 | 26,011 | 25,800 | 25,844 | 24,960 | 25,289 | 25,263 | 25,313 | 25,854 | 25,867 | 26,371 | 26,961 | 27,866 | 28,561 | 28,675 | 29,058 | | |
| **Apartments In Lease-up** | | 467 | 703 | 395 | 759 | 609 | 990 | 1,651 | 1,314 | 814 | 646 | 78 | 260 | 693 | 327 | 383 | 217 | 470 | 510 | 505 | 541 | 564 | 991 | 1,219 | 1,754 | 1,138 | 526 | 412 | 426 | | |
| **Occupancy Rate: Existing** | 97.6% | 98.1% | 97.2% | 97.5% | 97.1% | 97.9% | 96.0% | 94.7% | 91.9% | 93.0% | 92.6% | 93.2% | 93.3% | 94.6% | 94.7% | 96.0% | 96.0% | 96.7% | 96.40% | 96.70% | 96.40% | 96.50% | 93.60% | 94.40% | 95.00% | 96.40% | 96.40% | 96.50% | 96.90% | | |
| **New** | | 88.9% | 78.9% | 74.5% | 72.5% | 45.3% | 61.9% | 50.0% | 61.1% | 59.6% | 72.6% | 34.0% | 36.8% | 57.5% | 79.2% | 88.8% | 57.7% | 62.6% | 71.70% | 71.60% | 76.50% | 69.70% | 59.40% | 52.00% | 55.70% | 77.40% | 50.30% | 78.90% | 46.30% | | |
| **Market Occupancy Rate** | 97.6% | 98.1% | 97.2% | 97.5% | 97.1% | 97.9% | 96.0% | 94.7% | 91.9% | 93.0% | 92.6% | 93.2% | 93.3% | 94.6% | 94.7% | 96.0% | 96.0% | 96.7% | 96.40% | 96.70% | 96.40% | 96.50% | 93.60% | 94.40% | 95.00% | 96.40% | 96.40% | 96.50% | 96.90% | | |
| **Gross Occupancy Rate** | 97.6% | 97.9% | 96.6% | 97.1% | 96.3% | 96.5% | 94.6% | 91.7% | 90.3% | 92.0% | 92.1% | 93.0% | 92.7% | 93.6% | 94.5% | 95.9% | 95.7% | 96.1% | 95.90% | 96.20% | 96.00% | 95.90% | 92.30% | 92.50% | 92.60% | 95.70% | 95.60% | 96.30% | 96.20% | 97.6% | |
| **Occupied Units (See Notes)** | 21,938 | 21,904 | 21,548 | 22,018 | 21,950 | 22,211 | 22,507 | 22,610 | 22,899 | 23,846 | 24,026 | 24,278 | 24,204 | 24,805 | 24,929 | 25,436 | 25,149 | 25,016 | 24,903 | 24,898 | 24,839 | 25,342 | 24,800 | 25,528 | 26,590 | 27,744 | 27,797 | 27,996 | 28,354 | 29,277 | |
| **Absorption:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 720 | |
| **Past 6 Months** | **-180** | **-34** | **-356** | **470** | **-68** | **261** | **295** | **104** | **289** | **1,014** | **180** | **253** | **-74** | **601** | **124** | **507** | **-287** | **-133** | **-425** | **28** | **-59** | **503** | **-542** | **728** | **1,062** | **1,154** | **54** | **199** | **358** | 208 | |
| **Past 12 Months** | **-390** | **-214** | **-390** | **114** | **402** | **193** | **556** | **399** | **393** | **1,189** | **1,194** | **432** | **178** | **527** | **726** | **631** | **220** | **-420** | **-511** | **-429** | **-31** | **444** | **-39** | **186** | **1,790** | **2,216** | **1,207** | **253** | **557** | 393 | |
| **Past 24 Months** | **-210** | **-424** | **-570** | **80** | **46** | **663** | **488** | **660** | **688** | **1,293** | **1,483** | **1,446** | **358** | **780** | **652** | **1,232** | **344** | **87** | **-798** | **-562** | **-456** | **472** | **-98** | **689** | **1,248** | **2,944** | **2,269** | **1,407** | **611** | 653 | |

# Appendix A3-8: SKCA Development List

**THE APARTMENT DEVELOPMENT REPORT**
© Dupre + Scott Apartment Advisors
Updated March 27, 2012

Status: A = finished apartment; U = under construction; X = planned; C = existing or proposed condominium; H, R, T = hotel, retirement, tax credit

| County | Submarket | Neighborhood | Status | Units | End construction | Property name | Street number | Street name | City | Zip | Census | Developer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| King | K-C | Belltown/Dwntn/S I | X | 258 | 2/1/2014 | 101 Taylor | 101 | Taylor Avenue N | Seattle | 98109 | 72.00 | RD Merrill Company |
| King | K-C | Belltown/Dwntn/S I | U | 34 | 7/1/2012 | Volta | 2233 | 1st Avenue | Seattle | 98121 | 80.02 | Connell Real Estate & Developm |
| King | K-C | Belltown/Dwntn/S I | X | 115 | 7/1/2014 | 1st & Stewart Hotel | 1900 | 1st Avenue | Seattle | 98101 | 80.02 | Touchstone Corporation |
| King | K-C | Belltown/Dwntn/S I | U | 654 | 2/1/2013 | Via6 | 2121 | 6th Avenue | Seattle | 98121 | 72.00 | Pine Street Group LLC |
| King | K-C | Belltown/Dwntn/S I | X | 55 | 1/1/2015 | | 417 | Broad Street | Seattle | 98109 | 72.00 | Kauri Investments Ltd. |
| King | K-C | Belltown/Dwntn/S I | X | 132 | 8/1/2013 | Joseph Arnold Lofts | 2700 | Elliott Avenue | Seattle | 98121 | 80.01 | Schuster Group Inc. |
| King | K-C | Belltown/Dwntn/S I | X | 137 | 3/1/2014 | ArtHouse | 2334 | Elliott Avenue | Seattle | 98121 | 80.02 | The Pauls Corporation |
| King | K-C | Belltown/Dwntn/S I | U | 249 | 1/1/2014 | Viktoria | 1915 | 2nd Avenue | Seattle | 98101 | 80.02 | Goodman Real Estate |
| King | K-C | Belltown/Dwntn/S I | X | 343 | 12/1/2015 | Cosmopolitan Motor | 2030 | 8th Avenue | Seattle | 98121 | 73.00 | GID Urban Development Group |
| King | K-C | Belltown/Dwntn/S I | U | 107 | 7/1/2013 | Stadium Place - We | 201 S | King Street | Seattle | 98104 | 73.00 | Daniels Real Estate |
| King | K-C | Belltown/Dwntn/S I | X | 386 | 3/1/2015 | 815 Pine | 815 | Pine Street | Seattle | 98101 | 73.00 | Holland Residential |
| King | K-C | Belltown/Dwntn/S I | x | 75 | 3/1/2015 | | 200 | Occidental Avenue S | Seattle | 98104 | 92.00 | Urban Visions |
| King | K-C | Belltown/Dwntn/S I | U | 184 | 4/1/2012 | Alto | 311 | Cedar Street | Seattle | 98121 | 72.00 | Harbor Properties Inc |
| King | K-C | Belltown/Dwntn/S I | U | 145 | 4/1/2013 | John Street | 975 | John Street | Seattle | 98109 | 73.00 | Tarragon |
| King | K-C | Belltown/Dwntn/S I | X | 344 | 4/1/2015 | West Edge Tower | 1430 | 2nd Avenue | Seattle | 98101 | 81.00 | Urban Visions |
| King | K-C | Belltown/Dwntn/S I | U | 122 | 4/1/2013 | Bell 206 | 206 | Bell Street | Seattle | 98121 | 80.01 | HB Capital |
| King | K-C | Belltown/Dwntn/S I | U | 278 | 11/1/2013 | Stack House | 409 | Yale Avenue N | Seattle | 98109 | 73.00 | Vulcan Northwest |
| King | K-C | Belltown/Dwntn/S I | S | 51 | 1/1/2012 | Gethsemane Luther | 901 | Stewart Street | Seattle | 98101 | 73.00 | Compass Housing Alliance |
| King | K-C | Belltown/Dwntn/S I | X | 300 | 5/1/2014 | Third Avenue | 2625 | 3rd Avenue | Seattle | 98121 | 80.01 | HB Capital |
| King | K-C | Belltown/Dwntn/S I | U | 208 | 12/1/2012 | Post | 888 | Western Avenue | Seattle | 98104 | 81.00 | Goodman Real Estate |
| King | K-C | Belltown/Dwntn/S I | S | 84 | 6/1/2013 | Williams | 219 | Pontius Avenue N | Seattle | 98109 | 73.00 | Plymouth Housing Group |
| King | K-C | Belltown/Dwntn/S I | X | 333 | 4/1/2014 | Stadium Place-Soutl | 201 S | King Street | Seattle | 98104 | 73.00 | Daniels Real Estate |
| King | K-C | Belltown/Dwntn/S I | X | 160 | 11/1/2014 | 8th & Thomas | 777 | Thomas Street | Seattle | 98109 | 72.00 | MacFarlane Partners |
| King | K-C | Belltown/Dwntn/S I | x | 290 | 8/1/2015 | | 424 | Boren Avenue N | Seattle | 98109 | 73.00 | Greystar |
| King | K-C | Belltown/Dwntn/S I | S | 75 | 1/1/2014 | | 200 | Dexter Avenue N | Seattle | 98109 | 72.00 | Compass Housing Alliance |
| King | K-C | Belltown/Dwntn/S I | U | 188 | 10/1/2013 | Martin | 2101 | 5th Avenue | Seattle | 98121 | 72.00 | Vulcan Northwest |
| King | K-C | Belltown/Dwntn/S I | X | 174 | 1/1/2014 | AMLI SLU | 1260 | Republican Street | Seattle | 98109 | 73.00 | AMLI Residential |
| King | K-C | Belltown/Dwntn/S I | x | 160 | 12/1/2013 | 4th and Denny | 2720 | 4th Avenue | Seattle | 98121 | 72.00 | HB Capital |
| King | K-C | Belltown/Dwntn/S I | U | 73 | 3/1/2013 | Stadium Place - Pod | 201 S | King Street | Seattle | 98104 | 73.00 | Daniels Real Estate |
| King | K-C | Belltown/Dwntn/S I | X | 49 | 1/1/2014 | 3rd & Bell | 2217 | 3rd Avenue | Seattle | 98121 | 80.01 | Daly Partners |
| King | K-C | Belltown/Dwntn/S I | X | 134 | 9/1/2013 | | 1201 | Mercer Street | Seattle | 98109 | 73.00 | Holland Residential |
| King | K-C | Belltown/Dwntn/S I | X | 106 | 8/1/2014 | | 500 | John Street | Seattle | 98109 | 72.00 | Graham Lundberg & Peschel |
| King | K-C | Capitol Hill/Eastlake | x | 75 | 5/1/2014 | | 1222 E | Pine Street | Seattle | 98122 | 75.00 | Metropolitan Homes |
| King | K-C | Capitol Hill/Eastlake | U | 107 | 4/1/2012 | Citizen | 1222 E | Madison Street | Seattle | 98122 | 75.00 | Wallace Properties Inc. |
| King | K-C | Capitol Hill/Eastlake | X | 48 | 2/1/2014 | | 418 | Bellevue Avenue E | Seattle | 98102 | 74.00 | InCity Properties |
| King | K-C | Capitol Hill/Eastlake | U | 234 | 11/1/2012 | 230 Broadway | 230 | Broadway Avenue E | Seattle | 98102 | 75.00 | RD Merrill Company |
| King | K-C | Capitol Hill/Eastlake | U | 58 | 4/1/2013 | Cameo | 1527 | 15th Avenue | Seattle | 98122 | 75.00 | Continental Properties LLC |
| King | K-C | Capitol Hill/Eastlake | C | 21 | 12/1/2012 | Enclave | 2808 | Fairview Avenue E | Seattle | 98102 | 61.00 | Trinity Real Estate |
| King | K-C | Capitol Hill/Eastlake | U | 79 | 4/1/2013 | 10th & Union | 954 E | Union Street | Seattle | 98122 | 75.00 | Seawest Investment Associates |
| King | K-C | Capitol Hill/Eastlake | X | 80 | 2/1/2014 | | 1650 E | Olive Way | Seattle | 98102 | 74.00 | Pacific Crest Property Mgmt |
| King | K-C | Capitol Hill/Eastlake | X | 71 | 6/1/2014 | Stream Belmont | 500 | Belmont Avenue E | Seattle | 98102 | 74.00 | M2K Partners |
| King | K-C | Capitol Hill/Eastlake | U | 61 | 12/1/2012 | BelRoy Homes | 711 | Bellevue Avenue E | Seattle | 98102 | 66.00 | Wyco Inc |
| King | K-C | Capitol Hill/Eastlake | X | 106 | 12/1/2013 | La Bella Vita | 1515 | 14th Avenue | Seattle | 98122 | 75.00 | Madrona Real Estate Investors |
| King | K-C | Capitol Hill/Eastlake | x | 50 | 9/1/2013 | 19th & E Mercer | 526 | 19th Avenue E | Seattle | 98112 | 76.00 | Lake Union Partners |
| King | K-C | Capitol Hill/Eastlake | S | 88 | 6/1/2014 | 12th Avenue Arts | 1620 | 12th Avenue | Seattle | 98122 | 75.00 | Capitol Hill Housing |
| King | K-C | Capitol Hill/Eastlake | x | 70 | 4/1/2014 | | 1145 | 10th Avenue E | Seattle | 98102 | 65.00 | Continental Properties LLC |
| King | K-C | Capitol Hill/Eastlake | x | 250 | 4/1/2015 | Broadstone Capitol | 1020 E | Union Street | Seattle | 98122 | 75.00 | Alliance Residential |
| King | K-C | Capitol Hill/Eastlake | X | 24 | 6/1/2014 | | 2200 | 24th Avenue E | Seattle | 98112 | 62.00 | 2200 Boston LLC |
| King | K-C | Capitol Hill/Eastlake | X | 37 | 7/1/2013 | | 1711 | 12th Avenue | Seattle | 98122 | 75.00 | Gramor Development LLC |
| King | K-C | Capitol Hill/Eastlake | X | 100 | 6/1/2015 | | 1320 E | Pike Street | Seattle | 98122 | 75.00 | Madrona Real Estate Investors |
| King | K-C | Capitol Hill/Eastlake | X | 35 | 10/1/2013 | | 1406 E | Republican Street | Seattle | 98112 | 75.00 | |
| King | K-C | Central | U | 118 | 10/1/2012 | | 412 | Broadway Avenue | Seattle | 98122 | 86.00 | Gerding Edlen Development |
| King | K-C | Central | a | 131 | 3/15/2012 | Lawrence Lofts | 1818 E | Madison Street | Seattle | 98122 | 79.00 | Val Thomas Inc |
| King | K-C | Central | R | 61 | 1/1/2013 | | 2000 S | Jackson Street | Seattle | 98144 | 90.00 | Low Income Housing Inst. |
| King | K-C | Central | X | 92 | 12/1/2014 | | 2203 E | Union Street | Seattle | 98122 | 79.00 | JC Mueller LLC |
| King | K-C | Central | X | 96 | 7/1/2014 | | 2051 E | Madison Street | Seattle | 98122 | 79.00 | JC Mueller LLC |
| King | K-C | Central | X | 222 | 6/1/2014 | | 2026 E | Madison Street | Seattle | 98122 | 79.00 | JC Mueller LLC |
| King | K-C | Central | S | 40 | 3/1/2012 | | 500 | 12th Avenue | Seattle | 98122 | 86.00 | Capitol Hill Housing |
| King | K-C | Central | S | 100 | 12/1/2014 | Yesler Terrace #1 | 1105 E | Fir Street | Seattle | 98122 | 86.00 | Seattle Housing Authority |
| King | K-C | Central | R | 102 | 12/1/2013 | Aegis Assisted Livi | 2200 E | Madison Street | Seattle | 98112 | 79.00 | Aegis Senior Communities |
| King | K-C | Central | H | 56 | 6/1/2012 | Terraza | 433 | 11th Avenue | Seattle | 98122 | 86.00 | La Serena Holdings Inc |
| King | K-C | Central | S | 61 | 12/1/2013 | Ernestine Anderson | 2010 S | Jackson Street | Seattle | 98144 | 90.00 | Low Income Housing Inst. |
| King | K-C | Central | x | 203 | 9/1/2014 | | 524 | Broadway Avenue | Seattle | 98122 | 86.00 | Stratford Company |
| King | K-C | Central | X | 32 | 12/1/2013 | | 1823 | 18th Avenue | Seattle | 98122 | 79.00 | Rudd Development Co |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| King | K-C | First Hill | X | 120 | 10/1/2013 | | 1519 | Minor Avenue | Seattle | 98101 | 83.00 | Gerding Edlen Development |
| King | K-C | First Hill | U | 108 | 6/1/2012 | Terravita | 514 E | Pine Street | Seattle | 98122 | 84.00 | Murray Franklyn |
| King | K-C | First Hill | X | 327 | 9/1/2014 | Seneca Tow ers | 802 | Seneca Street | Seattle | 98101 | 82.00 | Laconia Development LLC |
| King | K-C | First Hill | X | 303 | 12/1/2015 | 715 E Pine | 715 E | Pine Street | Seattle | 98122 | 84.00 | Wolff Company |
| King | K-C | First Hill | U | 237 | 10/1/2012 | Coppins Well | 1200 | Madison Street | Seattle | 98104 | 84.00 | Holland Residential |
| King | K-C | First Hill | U | 134 | 6/1/2013 | 320 E Pine | 320 E | Pine Street | Seattle | 98122 | 84.00 | Stratford Company |
| King | K-C | First Hill | U | 23 | 8/1/2012 | Bellevue Terrace | 1623 | Bellevue Avenue | Seattle | 98122 | 84.00 | |
| King | K-C | First Hill | X | 74 | 4/1/2014 | | 1601 | 9th Avenue | Seattle | 98101 | 82.00 | Teutsch Partners |
| King | K-C | Magnolia | X | 28 | 3/1/2015 | | 2406 | 32nd Avenue W | Seattle | 98199 | 57.00 | |
| King | K-C | Magnolia | X | 118 | 12/1/2013 | Barrett Park | 3320 | 16th Avenue W | Seatttle | 98119 | 58.01 | Goodman Real Estate |
| King | K-C | Magnolia | U | 236 | 3/1/2013 | Slate Apartments & | 1603 W | Dravus Street | Seattle | 98119 | 58.02 | Unico Properties |
| King | K-C | Queen Anne | U | 118 | 2/1/2013 | Stream Uptow n | 708 | 6th Avenue N | Seattle | 98109 | 67.00 | Star Equity Management |
| King | K-C | Queen Anne | U | 41 | 10/1/2012 | Elliott Bay View | 151 | John Street | Seattle | 98109 | 71.00 | Sustainably Green LLC |
| King | K-C | Queen Anne | U | 275 | 5/1/2013 | Expo | 100 | Republican Street | Seattle | 98109 | 71.00 | Essex Property Trust |
| King | K-C | Queen Anne | X | 110 | 2/1/2014 | Queen Anne Market | 1900 | Queen Anne Avenue | Seattle | 98109 | 68.00 | Emerald Bay Equity |
| King | K-C | Queen Anne | A | 23 | 3/1/2012 | | 420 | Queen Anne Avenue | Seattle | 98109 | 71.00 | Boylston Ave Partners |
| King | K-C | Queen Anne | U | 284 | 3/1/2013 | Union | 901 | Dexter Avenue N | Seattle | 98109 | 67.00 | Holland Residential |
| King | K-C | Queen Anne | a | 203 | 2/1/2012 | AVA Queen Anne | 330 | 3rd Avenue W | Seattle | 98119 | 71.00 | Avalon Bay Communities |
| King | K-C | Queen Anne | U | 57 | 8/1/2012 | Seven Hills | 1919 | Queen Anne Avenue | Seattle | 98109 | 68.00 | Emerald Bay Equity |
| King | K-C | Queen Anne | U | 45 | 2/1/2013 | H2O | 201 W | Harrison Street | Seattle | 98119 | 71.00 | Patera Development LLC |
| King | K-C | Queen Anne | U | 100 | 4/1/2013 | Hue | 717 | Dexter Avenue N | Seattle | 98109 | 67.00 | Holland Residential |
| King | K-C | Queen Anne | x | 124 | 11/1/2013 | | 600 | Elliott Avenue W | Seattle | 98119 | 71.00 | Goodman Real Estate |
| King | K-C | Queen Anne | x | 286 | 1/1/2014 | | 801 | Dexter Avenue N | Seattle | 98109 | 67.00 | Holland Residential |
| King | K-C | Queen Anne | R | 48 | 12/1/2012 | | 225 W | Galer Street | Seattle | 98119 | 70.00 | Aegis Senior Communities |
| King | K-C | Queen Anne | X | 33 | 10/1/2013 | | 521 | 2nd Avenue W | Seattle | 98119 | 71.00 | Isola Homes |
| King | K-C | Queen Anne | x | 183 | 2/1/2015 | | 315 | 1st Avenue N | Seattle | 98109 | 71.00 | SRM Development LLC |
| King | K-C | Queen Anne | X | 20 | 9/1/2013 | Llew ellyn | 717 | 3rd Avenue N | Seattle | 98109 | 70.00 | |
| King | K-C | Queen Anne | X | 43 | 7/1/2013 | | 509 | 1st Avenue W | Seattle | 98119 | 71.00 | Gramor Development LLC |
| King | K-C | Queen Anne | X | 81 | 1/1/2015 | | 500 | 3rd Avenue W | Seattle | 98119 | 71.00 | Continental Properties LLC |
| King | K-C | Queen Anne | X | 53 | 1/1/2013 | | 306 | Queen Anne Avenue | Seattle | 98109 | 71.00 | Gramor Development LLC |
| **Average** | | | | **135.6** | | | | | | | | |

# Appendix A3-9: Seattle (King North) Area (SKNA) Development List

**THE APARTMENT DEVELOPMENT REPORT**



Updated March 27, 2012

Status: A = finished apartment; U = under construction; X = planned; C = existing or proposed condominium; H, R, T = hotel, retirement, tax credit

| County | Submarket | Neighborhood | Status | Units | End construction | Property name | Street number | Street name | City | Zip | Census tract | Developer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| King | K-N | Ballard | H | 29 | 2/1/2013 | Olympic Sports Club | 5214 | Ballard Avenue NW | Seattle | 98107 | 47.00 | Ballard Property Holding Co. |
| King | K-N | Ballard | S | 80 | 10/1/2013 | Compass Center | 1753 NW | 56th Street | Seattle | 98107 | 47.00 | Compass Housing Alliance |
| King | K-N | Ballard | U | 166 | 3/1/2013 | Broadstone Koi | 1139 NW | Market Street | Seattle | 98107 | 47.00 | Alliance Residential |
| King | K-N | Ballard | U | 265 | 4/1/2013 | Avalon Ballard | 1400 NW | Market Street | Seattle | 98107 | 47.00 | Avalon Bay Communities |
| King | K-N | Ballard | X | 135 | 10/1/2014 | 56th Street | 1760 NW | 56th Street | Seattle | 98107 | 47.00 | Province Group |
| King | K-N | Ballard | U | 287 | 3/1/2014 | Market Street Landing | 1500 NW | Market Street | Seattle | 98107 | 47.00 | Equity Residential Properties Tru |
| King | K-N | Ballard | U | 104 | 12/1/2012 | | 6559 | 15th Avenue NW | Seattle | 98117 | 33.00 | Goodman Real Estate |
| King | K-N | Ballard | X | 304 | 5/1/2014 | AMLI Ballard | 2428 NW | Market Street | Seattle | 98107 | 32.00 | AMLI Residential |
| King | K-N | Ballard | X | 51 | 4/1/2013 | | 8022 | 15th Avenue NW | Seattle | 98117 | 30.00 | Goodman Real Estate |
| King | K-N | Ballard | X | 124 | 4/1/2014 | RD Merrill at Ballard I | 5601 | 24th Avenue NW | Seattle | 98107 | 32.00 | RD Merrill Company |
| King | K-N | Ballard | X | 305 | 2/1/2015 | | 5343 | Tallman Avenue NW | Seattle | 98107 | 47.00 | HAL Investments |
| King | K-N | Ballard | S | 51 | 5/1/2013 | | 2014 NW | 57th Street | Seattle | 98107 | 47.00 | Low Income Housing Inst. |
| King | K-N | Greenlake/Wallingfor | U | 154 | 7/1/2012 | Prescott Wallingford | 3920 | Stone Way N | Seattle | 98103 | 54.00 | Prescott Development |
| King | K-N | Greenlake/Wallingfor | U | 63 | 1/1/2013 | Kavela | 6521 | Roosevelt Way NE | Seattle | 98115 | 36.00 | Urban Partners |
| King | K-N | Greenlake/Wallingfor | U | 48 | 5/1/2013 | | 309 NW | 41st Street | Seattle | 98107 | 48.00 | Kauri Investments Ltd. |
| King | K-N | Greenlake/Wallingfor | X | 297 | 12/1/2013 | Greenlake Village | 7104 | Woodlaw n Avenue NE | Seattle | 98115 | 36.00 | Lorig Associates LLC |
| King | K-N | Greenlake/Wallingfor | U | 93 | 2/1/2013 | Merrill at Stone Way II | 4301 | Stone Way N | Seattle | 98103 | 50.00 | RD Merrill Company |
| King | K-N | Greenlake/Wallingfor | X | 24 | 9/1/2012 | 47+7 | 4558 | 7th Avenue NE | Seattle | 98105 | 52.00 | Sustainable Living Innovations |
| King | K-N | Greenlake/Wallingfor | U | 52 | 3/1/2013 | | 3606 | Woodland Park Avenue N | Seattle | 98103 | 54.00 | Goodman Real Estate |
| King | K-N | Greenlake/Wallingfor | X | 27 | 4/1/2013 | Wally | 4111 | Stone Way N | Seattle | 98103 | 50.00 | Lake Union Partners |
| King | K-N | Greenlake/Wallingfor | X | 125 | 12/31/2015 | RD Merrill at Stone Way | 4106 | Stone Way N | Seattle | 98103 | 54.00 | RD Merrill Company |
| King | K-N | Greenlake/Wallingfor | S | 50 | 6/1/2014 | | 5019 | Roosevelt Way NE | Seattle | 98105 | 45.00 | Low Income Housing Inst. |
| King | K-N | Greenlake/Wallingfor | X | 170 | 1/1/2015 | | 4527 | 8th Avenue NE | Seattle | 98105 | 52.00 | Intracorp |
| King | K-N | Greenlake/Wallingfor | X | 75 | 10/1/2013 | | 4029 | 7th Avenue NE | Seattle | 98105 | 52.00 | Triad Development |
| King | K-N | Greenlake/Wallingfor | X | 160 | 10/1/2014 | | 3635 | Woodland Park Avenue N | Seattle | 98103 | 54.00 | Harbor Properties Inc |
| King | K-N | Greenlake/Wallingfor | x | 65 | 1/1/2015 | Lavita | 4055 | 8th Avenue NE | Seattle | 98105 | 52.00 | Money Grass Investments Inc |
| King | K-N | North Seattle | X | 252 | 1/1/2015 | 507 Northgate II | 525 NE | Northgate Way | Seattle | 98125 | 12.00 | Wallace Properties Inc. |
| King | K-N | North Seattle | U | 91 | 8/1/2012 | Jasper | 8606 | 35th Avenue NE | Seattle | 98115 | 22.00 | Wood Partners |
| King | K-N | North Seattle | U | 269 | 11/1/2013 | Leilani | 10201 | Greenw ood Avenue N | Seattle | 98133 | 17.00 | Goodman Real Estate |
| King | K-N | North Seattle | R | 104 | 1/1/2014 | Lake City Seniors | 13730 | Lake City Way NE | Seattle | 98125 | 1.00 | Steve Smith Development |
| King | K-N | North Seattle | X | 37 | 7/1/2014 | | 12544 | 15th Avenue NE | Seattle | 98125 | 2.00 | ACI Micro |
| King | K-N | North Seattle | U | 318 | 3/1/2014 | Bella Lago | 14027 | Lake City Way NE | Seattle | 98125 | 1.00 | ConAm |
| King | K-N | North Seattle | X | 56 | 4/1/2013 | | 301 N | 107th Street | Seattle | 98133 | 14.00 | Goodman Real Estate |
| King | K-N | North Seattle | S | 87 | 1/1/2013 | | 10507 | Aurora Avenue N | Seattle | 98133 | 13.00 | Dow ntow n Emergency Services |
| King | K-N | North Seattle | X | 47 | 5/1/2015 | | 8626 | Roosevelt Way NE | Seattle | 98115 | 20.00 | Western Property Mgmt |
| King | K-N | North Seattle | X | 41 | 10/1/2014 | Greenw ood Place | 14307 | Greenw ood Avenue N | Seattle | 98133 | 4.01 | Greenw ood Place LLC |
| King | K-N | North Seattle | X | 23 | 1/1/2015 | | 12350 | 33rd Avenue NE | Seattle | 98125 | 7.00 | |
| King | K-N | Shoreline | U | 148 | 6/1/2012 | Artiste | 20221 | Aurora Avenue N | Shoreline | 98133 | 203.00 | Weidner Investment Services |
| King | K-N | Shoreline | X | 129 | 7/1/2014 | Brighton Court | 1210 N | 152nd Street | Shoreline | 98133 | 210.00 | First Northw est Development Inc |
| King | K-N | University | U | 100 | 10/1/2012 | Muriel's Landing | 5252 | University Way NE | Seattle | 98105 | 44.00 | Schuster Group Inc. |
| King | K-N | University | S | 142 | 3/1/2012 | UW Housing | 1302 NE | Campus Parkw ay | Seattle | 98105 | 53.02 | University of Washington Capita |
| King | K-N | University | S | 528 | 6/1/2012 | UW Housing | 1315 NE | Campus Parkw ay | Seattle | 98105 | 53.02 | University of Washington Capita |
| King | K-N | University | S | 230 | 12/31/2012 | UW Student Housing | 1218 NE | Campus Parkw ay | Seattle | 98105 | 53.02 | University of Washington Capita |
| King | K-N | University | X | 200 | 5/1/2015 | Roosevelt I | 6503 | 15th Avenue NE | Seattle | 98115 | 26.00 | HB Capital |
| King | K-N | University | X | 292 | 3/1/2014 | Avalon University Distri | 4535 | 12th Avenue NE | Seattle | 98105 | 53.01 | Avalon Bay Communities |
| King | K-N | University | S | 286 | 12/1/2014 | UW Housing | 3925 | Adams Lane NE | Seattle | 98105 | 53.01 | University of Washington Capita |
| King | K-N | University | X | 180 | 10/1/2014 | | 4557 | 11th Avenue NE | Seattle | 98105 | 53.01 | Security Properties |
| King | K-N | University | X | 50 | 9/1/2013 | Ben on Brooklyn | 5043 | Brooklyn Avenue NE | Seattle | 98105 | 44.00 | Royal Arms C. P. |
| King | K-N | University | X | 112 | 12/1/2014 | | 1020 NE | 63rd Street | Seattle | 98115 | 44.00 | Intracorp |
| King | K-N | University | X | 103 | 9/1/2013 | | 4119 | 12th Avenue NE | Seattle | 98105 | 53.01 | Triad Development |
| King | K-N | University | X | 105 | 10/1/2014 | | 4123 | 12th Avenue NE | Seattle | 98105 | 53.01 | Triad Development |
| **Average** | | | | **141.843** | | | | | | | | |

# Appendix A3-10: The rest of the King County Area Development List

**THE APARTMENT DEVELOPMENT REPORT**



Updated March 27, 2012

Status: A = finished apartment; U = under construction; X = planned; C = existing or proposed condominium; H, R, T = hotel, retirement, tax credit

| County | Submarket | Neighborhood | Status | Units | End construction | Property name | Street number | Street name | City | Zip | Census tract | Developer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| King | K-E | Bellevue-East | U | 66 | 5/1/2012 | Woodland Commons | 13906 NE | 9th Place | Bellevue | 98005 | 236.03 | Essex Property Trust |
| King | K-E | Bellevue-East | X | 108 | 10/1/2014 | Bellevue Madison II | 15420 NE | 8th Street | Bellevue | 98007 | 232.01 | Capital Valley Investments |
| King | K-E | Bellevue-West | X | 75 | 11/1/2013 | Park Metro | 11017 NE | 12th Street | Bellevue | 98004 | 238.02 | Evergreen Point Development |
| King | K-E | Bellevue-West | H | 100 | 12/31/2012 | Bellevue Park Hotel | 25 | 102nd Avenue NE | Bellevue | 98004 | 238.02 | |
| King | K-E | Bellevue-West | X | 262 | 1/1/2015 | Bellevue at Main | 15 | Bellevue Way SE | Bellevue | 98004 | 238.02 | SRM Development LLC |
| King | K-E | Bellevue-West | S | 57 | 10/1/2012 | | 204 | 111th Avenue NE | Bellevue | 98004 | 238.02 | Low Income Housing Inst. |
| King | K-E | Bellevue-West | X | 145 | 2/1/2014 | Soma Towers I | 288 | 106th Avenue NE | Bellevue | 98004 | 238.02 | SU Development MLP |
| King | K-E | Bellevue-West | R | 152 | 1/1/2014 | Pacific Regent II | 919 | 109th Avenue NE | Bellevue | 98004 | 238.02 | |
| King | K-E | Bellevue-West | X | 160 | 4/1/2014 | Bellevue Park II | 88 | 102nd Avenue NE | Bellevue | 98004 | 238.02 | Cantera Development Group |
| King | K-E | Bothell | S | 250 | 3/1/2014 | Boulevard Place | 18221 | Bothell Way NE | Bothell | 98011 | 218.03 | SHAG (Sr Housing Assistance ( |
| King | K-E | Bothell | x | 430 | 4/1/2015 | Bothell Landing | 18321 | 98th Avenue NE | Bothell | 98011 | 218.03 | Toll Brothers Cam West |
| King | K-E | Bothell | X | 112 | 1/1/2014 | | 104xx NE | 185th Street | Bothell | 98011 | 218.04 | Toll Brothers Cam West |
| King | K-E | Factoria | C | 60 | 12/1/2012 | Talus Village Center | 2179 | Talus Drive | Issaquah | 98027 | 250.04 | Intracorp |
| King | K-E | Factoria | X | 346 | 7/1/2015 | Quendall Terminals | 4350 | Lake Washington Blvd N | Renton | 98056 | 247.02 | Century Pacific LP |
| King | K-E | Factoria | X | 230 | 3/1/2014 | Kenneydale | 1901 NE | 48th Street | Renton | 98056 | 247.02 | Seelig Properties |
| King | K-E | Issaquah | A | 253 | 3/1/2012 | Discovery Heights | 989 | NE Discovery Drive | Issaquah | 98029 | 321.04 | HNN Associates |
| King | K-E | Issaquah | X | 107 | 11/1/2013 | Discovery Heights II | 989 NE | Discovery Drive | Issaquah | 98029 | 322.10 | HNN Associates |
| King | K-E | Juanita | U | 196 | 9/1/2013 | Juanita Village II | 11728 | 97th Lane NE | Kirkland | 98034 | 222.02 | M-M Properties |
| King | K-E | Juanita | U | 96 | 10/1/2012 | Ondine | 11690 | 98th Avenue NE | Kirkland | 98034 | 220.06 | Weidner Investment Services |
| King | K-E | Mercer Island | X | 85 | 7/1/2013 | Mercer II | 2460 | 76th Avenue SE | Mercer Islan | 98040 | 243.00 | Dollar Development Company |
| King | K-E | Mercer Island | U | 166 | 6/1/2013 | Aviara | 2441 | 76th Avenue SE | Mercer Islan | 98040 | 243.00 | BRE Properties |
| King | K-E | Redmond | X | 134 | 12/1/2013 | Centerpointe | 16355 | Cleveland Street | Redmond | 98052 | 323.09 | Greystar |
| King | K-E | Redmond | X | 149 | 4/1/2014 | Old Town Mixed Us | 16161 | Cleveland Street | Redmond | 98052 | 323.09 | White/Peterman Properties Inc. |
| King | K-E | Redmond | U | 156 | 12/1/2012 | Redmond Square | 7977 | 170th Avenue NE | Redmond | 98052 | 323.09 | Cosmos Development Corp. |
| King | K-E | Redmond | X | 148 | 2/1/2014 | | 15655 NE | 85th Street | Redmond | 98052 | 323.09 | Pine Forest Properties |
| King | K-E | Woodinville/Totem | S | 60 | 1/1/2012 | Francis Village | 12601 NE | 124th Street | Kirkland | 98034 | 219.03 | Imagine Housing |
| King | K-E | Woodinville/Totem | X | 108 | 2/1/2014 | Totem Station | 124xx NE | 116th Street | Kirkland | 98034 | 219.03 | Main Street Property Group |
| King | K-S | Beacon Hill | X | 100 | 8/1/2013 | Hiawatha | 945 | Hiawatha Place S | Seattle | 98144 | 94.00 | Seavest Realty Inc. |
| King | K-S | Beacon Hill | S | 51 | 12/31/2012 | Mt Baker Link Statio | 2915 | Rainier Avenue S | Seattle | 98144 | 100.00 | |
| King | K-S | Beacon Hill | S | 30 | 12/1/2013 | McClellan | 17xx S | McClellan Street | Seattle | 98144 | 100.00 | Pacific Housing NW LLC |
| King | K-S | Beacon Hill | x | 111 | 12/1/2015 | Mount Baker Station | 2615 | 25th Avenue S | Seattle | 98144 | 100.00 | Lake Union Partners |
| King | K-S | Beacon Hill | X | 22 | 12/1/2014 | | 1814 | 12th Avenue S | Seattle | 98144 | 94.00 | Rudd Development Co |
| King | K-S | Burien | X | 80 | 1/1/2015 | Burien TOD | 300 SW | 150th Street | Burien | 98166 | 279.00 | Alliance Property Group |
| King | K-S | Rainier Valley | S | 61 | 6/1/2012 | | 7700 | Rainier Avenue S | Seattle | 98118 | 111.02 | |
| King | K-S | Rainier Valley | X | 190 | 10/1/2014 | Columbia Plaza | 4801 | Rainier Avenue S | Seattle | 98118 | 103.00 | Security Properties |
| King | K-S | Rainier Valley | U | 124 | 9/1/2012 | GreenHouse | 3701 S | Hudson Street | Seattle | 98118 | 103.00 | Urban Partners |
| King | K-S | Rainier Valley | S | 52 | 12/1/2012 | | 4484 | Martin Luther King Jr Way | Seattle | 98108 | 101.00 | Mercy Housing Northwest |
| King | K-S | Rainier Valley | X | 200 | 10/1/2015 | Zion Prep Site | 4730 | 32nd Avenue S | Seattle | 98118 | 103.00 | JC Mueller LLC |
| King | K-S | Rainier Valley | x | 196 | 12/1/2015 | Mount Baker Station | 2715 | 25th Avenue S | Seattle | 98144 | 101.00 | Lake Union Partners |
| King | K-S | Riverton/Tukwila | U | 208 | 10/1/2012 | Cambridge Park Villa | 6801 S | 133rd Street | Seattle | 98178 | 261.00 | |
| King | K-S | Riverton/Tukwila | R | 382 | 12/1/2014 | Tukwila Village | 14400 | Tukwila International Blvd | Tukwila | 98168 | 282.00 | SHAG (Sr Housing Assistance ( |
| King | K-S | West Seattle | U | 60 | 10/1/2012 | CT House | 3295 SW | Avalon Way | Seattle | 98126 | 99.00 | Longwell Company |
| King | K-S | West Seattle | U | 78 | 4/1/2012 | Element 42 | 2641 | 42nd Avenue SW | Seattle | 98116 | 98.00 | Madison Development |
| King | K-S | West Seattle | X | 210 | 1/1/2014 | Fauntleroy Place | 3922 SW | Alaska Street | Seattle | 98116 | 105.00 | Madison Development |
| King | K-S | West Seattle | U | 196 | 5/1/2013 | Youngstown Flats | 4040 | 26th Avenue SW | Seattle | 98106 | 99.00 | Legacy Partners Residential Inc. |
| King | K-S | West Seattle | x | 198 | 11/1/2014 | Main & Main | 4706 | California Avenue SW | Seattle | 98116 | 105.00 | Equity Residential Properties Tru |
| King | K-S | West Seattle | X | 133 | 2/1/2014 | Oregon 42 | 4502 | 42nd Avenue SW | Seattle | 98116 | 105.00 | ConAm |
| King | K-S | West Seattle | X | 40 | 6/1/2013 | | 9030 | 35th Avenue SW | Seattle | 98126 | 115.00 | Linardic Design Group |
| King | K-S | West Seattle | R | 349 | 1/1/2013 | Kenney Expansion | 7125 | Fauntleroy Way SW | Seattle | 98136 | 116.00 | |
| King | K-S | West Seattle | U | 62 | 1/1/2013 | Nova | 4600 | 36th Avenue SW | Seattle | 98126 | 105.00 | Harbor Properties Inc |
| King | K-S | West Seattle | x | 111 | 11/1/2013 | Avalon Way | 3261 SW | Avalon Way | Seattle | 98126 | 99.00 | CFD LLC |
| King | K-S | West Seattle | X | 70 | 11/1/2014 | | 4433 | 42nd Avenue SW | Seattle | 98116 | 98.00 | BCK Investments |
| King | K-S | White Center | S | 64 | 3/1/2013 | Providence Joseph | 10900 | 4th Place SW | Seattle | 98146 | 268.02 | King County Housing Authority |
| King | K-S | White Center | S | 80 | 12/21/2012 | Wild Rose | 400 SW | Roxbury Street | Seattle | 98106 | 113.00 | King County Housing Authority |
| King | K-S | White Center | X | 20 | 1/1/2015 | | 9051 | 20th Avenue SW | Seattle | 98106 | 114.00 | FL 200 Investments LLC |
| King | K-SE | Des Moines | S | 36 | 12/1/2012 | Sea Mar | 24215 | Pacific Highway S | Des Moines | 98198 | 290.04 | |
| King | K-SE | Kent | X | 164 | 7/1/2014 | Kent Station | 4xx W | Smith Street | Kent | 98032 | 292.03 | Goodman Real Estate |
| King | K-SE | Renton | C | 28 | 3/1/2012 | Brandon Place | 24331 | 228th Avenue SE | Maple Valley | 98038 | 320.09 | |
| King | K-SE | Renton | U | 52 | 6/1/2012 | Azure Ridge | 10436 SE | Carr Road | Renton | 98055 | 258.01 | Lake Union Partners |
| King | K-SE | Renton | S | 250 | 12/1/2013 | Sunset Terrace | 970 | Harrington Avenue NE | Renton | 98056 | 254.00 | Renton Housing Authority |
| King | K-SE | Renton | X | 75 | 10/1/2014 | Heritage Hills II | 1250 S | Puget Drive | Renton | 98055 | 258.01 | Weidner Investment Services |

# Appendix A3-11: Peirce and Snohomish County, and Other, Development List

**THE APARTMENT DEVELOPMENT REPORT**

© Dupre + Scott Apartment Advisors

Updated March 27, 2012

Status: A = finished apartment; U = under construction; X = planned; C = existing or proposed condominium; H, R, T = hotel, retirement, tax credit

| County | Submarket | Neighborhood | Status | Units | End construction | Property name | Street number | Street name | City | Zip | Census tract | Developer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thurston | Other | Olympia | U | 72 | 12/1/2012 | Parkview | 4419 | Henderson Boulevard SE | Olympia | 98501 | 800.00 | Briggs Development Co |
| Thurston | Other | Olympia | U | 224 | 4/1/2012 | Woodland I | 800 | Yauger Way SW | Olympia | | 800.00 | American Capital Dev Inc |
| Thurston | Other | Olympia | X | 101 | 12/1/2012 | Hearthstone Olympi | 800 | Alta Street SW | Olympia | | 800.00 | Hearthstone Tumwater LLC |
| Thurston | Other | Olympia | x | 224 | 4/1/2015 | Woodland II | Yauger Way | Capital Mall Blvd | Olympia | | 800.00 | American Capital Dev Inc |
| Thurston | Other | Olympia | A | 56 | 1/1/2012 | Red Leaf Townhom | 1330 | Fones Road SE | Olympia | | 800.00 | Sandpiper Pacific Homes |
| Thurston | Other | Olympia | X | 56 | 3/1/2013 | | 1342 | Fones Road SE | Olympia | | 800.00 | Sandpiper Pacific Homes |
| Thurston | Other | Other Thurston | X | 164 | 8/1/2013 | Yelm Creek | 10520 | Creek Street SE | Yelm | 98597 | 803.00 | SEB Inc. |
| Kitsap | Other | Port Orchard | X | 105 | 7/1/2013 | Sedgwick Landing | SW Sedgwic | Sidney Road SW | Port Orchard | | 851.00 | Rush Development |
| Kitsap | Other | Poulsbo | S | 24 | 9/1/2012 | Ferncliff Village | 500 | Ferncliff Avenue | Bainbridge | | 852.00 | |
| Kitsap | Other | Poulsbo | X | 88 | 3/1/2013 | | Wyatt & | Grow Street | Bainbridge Island | | 852.00 | Asani LLC |
| Thurston | Other | Tumwater | S | 48 | 12/31/2012 | | 7136 | Littlerock Road SW | Tumwater | | 802.00 | Thurston County Housing Autho |
| Pierce | Pie | Fircrest/Universit | X | 100 | 11/1/2013 | Town Center at Uni | 35xx | Bridgeport Way W | University Pl | 98466 | 723.10 | SEB Inc. |
| Pierce | Pie | Gig Harbor | U | 90 | 6/1/2012 | 4425 Phase II | 4425 | Harbor Country Drive | Gig Harbor | 98335 | 724.08 | Dobler Development Co |
| Pierce | Pie | Mid Tacoma | U | 163 | 7/1/2012 | Vue25 | 805 S | 25th Street | Tacoma | 98405 | 617.00 | Randolph Street Realty Capital |
| Pierce | Pie | North Tacoma | U | 62 | 7/1/2012 | Commencement | 5204 N | Bennett Street | Ruston | 98407 | 603.00 | Onward Investors LLC |
| Pierce | Pie | North Tacoma | U | 173 | 2/1/2012 | Copperline at Point I | 5500 N | Ruston Way | Ruston | 98407 | 603.00 | MC Construction Consultants |
| Pierce | Pie | Other Pierce Co | U | 178 | 9/1/2012 | Trax at Dupont Stati | 930 | Ross Loop | Dupont | 98327 | 729.04 | Garco Construction |
| Pierce | Pie | Other Pierce Co | U | 234 | 9/1/2012 | Four Lakes | 6821 | Udall Street SE | Auburn | 98092 | 703.06 | Tarragon |
| Pierce | Pie | Puyallup/Sumner | U | 97 | 9/1/2012 | Cameron Square I | 19400 | Meridian Avenue E | Graham | 98338 | 731.09 | Eagle Creek Land & Developmer |
| Pierce | Pie | Puyallup/Sumner | U | 140 | 9/1/2012 | Bella on Canyon | 14115 | Canyon Road E | Puyallup | 98373 | 713.08 | SEB Inc. |
| Pierce | Pie | Puyallup/Sumner | U | 254 | 4/1/2012 | Linden Lane | 2505 E | Main Street | Puyallup | 98372 | 734.01 | Linden Construction |
| Pierce | Pie | Puyallup/Sumner | x | 189 | 1/1/2013 | Cedar Springs | 8127 | 179th Street E | Puyallup | 98375 | 731.09 | Cedar Springs Associates LLC |
| Pierce | Pie | Puyallup/Sumner | X | 92 | 7/1/2013 | Cameron Square II | 19400 | Meridian Avenue E | Graham | 98338 | 731.09 | Eagle Creek Land & Developmer |
| Pierce | Pie | South Tacoma | X | 125 | 12/1/2012 | West Mall Court | 47xx | Pine Street | Tacoma | 98409 | 629.00 | Dobler Development Co |
| Pierce | Pie | South Tacoma | X | 177 | 4/1/2013 | Pacifica | 4301 S | Pine Street | Tacoma | 98409 | 629.00 | Rush Development |
| Pierce | Pie | South Tacoma | R | 232 | 12/1/2012 | Vintage at Tacoma | 38xx S | Alder Street | Tacoma | 98409 | 629.00 | Inland Group |
| Snohomish | Sno | Central Everett | A | 178 | 3/1/2012 | Library Place II | 2731 | Rucker Avenue | Everett | 98201 | 408.00 | Skotdal Enterprises |
| Snohomish | Sno | Central Everett | A | 200 | 3/1/2012 | Library Place | 2731 | Rucker Avenue | Everett | 98201 | 408.00 | Skotdal Enterprises |
| Snohomish | Sno | Edmonds | C | 21 | 12/1/2012 | Valhalla Townhouse | 9133 | 232nd Street SW | Edmonds | 98026 | 507.00 | Goodman Real Estate |
| Snohomish | Sno | Edmonds | U | 89 | 10/1/2012 | Compass | 23110 | Edmonds Way | Edmonds | 98020 | 507.00 | Goodman Real Estate |
| Snohomish | Sno | Edmonds | X | 45 | 10/1/2014 | | 201 | Main Street | Edmonds | 98020 | 505.00 | Spee Construction |
| Snohomish | Sno | Lynnwood | X | 382 | 10/1/2014 | Oak Heights Urban ( | 15525 | Ash Way | Lynnwood | 98087 | 518.01 | Goodman Real Estate |
| Snohomish | Sno | Lynnwood | R | 254 | 12/1/2013 | Lodge at Quail Park | 4015 | 164th Street SW | Lynnwood | 98087 | 518.01 | |
| Snohomish | Sno | Lynnwood | X | 510 | 1/1/2015 | | 2514 | 164th Street SW | Lynnwood | 98087 | 518.02 | Avalon Bay Communities |
| Snohomish | Sno | Marysville/Monroe | C | 58 | 12/1/2013 | Torrington Ridge | 1707 S | Lake Stevens Road | Lake Stevens | 98258 | 526.07 | |
| Snohomish | Sno | Mill Creek | X | 230 | 7/1/2014 | Martha Lake Town ( | 16520 | Larch Way | Lynnwood | 98037 | 519.09 | Goodman Real Estate |
| Snohomish | Sno | Mill Creek | X | 95 | 7/1/2014 | Reserve at Town C | 14010 | North Creek Drive | Mill Creek | 98012 | 417.02 | Equity Residential Properties Tru |
| Snohomish | Sno | Mill Creek | C | 75 | 12/1/2013 | | 1325 | Seattle Hill Road | Bothell | 98012 | 520.05 | |
| Snohomish | Sno | Mountlake Terrac | U | 123 | 8/1/2013 | Arbor Village | 23601 | 56th Avenue W | Mountlake Te | 98043 | 511.00 | Afco & Sons LLC |
| Snohomish | Sno | Thrashers Corner | U | 372 | 11/1/2013 | Bailey Farms | 1225 | 183rd Street SE | Bothell | 98012 | 519.20 | Wolff Company |
| Snohomish | Sno | Thrashers Corner | T | 181 | 5/1/2012 | Willow Tree Grove I | 2129 | Maltby Road | Bothell | 98021 | 519.20 | HNN Associates |
| Snohomish | Sno | Thrashers Corner | x | 21 | 1/1/2014 | Filbert | 20618 | Filbert Drive | Bothell | 98012 | 519.19 | Mietzner Group |
| Snohomish | Sno | Thrashers Corner | U | 89 | 1/1/2013 | | 2021 | 201st Place SE | Bothell | 98012 | 519.20 | DRK Development |
| **Average** | | | | **173.5** | | | | | | | | |

## Appendix A4-1: Fundamental Demographic Demand Drivers

### A. Introduction

A traditional market analysis will evenly assess each step of the net absorption model (NAM) equally. This appendix holds information on those that have been deemed too important to not mention about, but not relevant to the changes in the next few years. This list consists of population, average household size, headship rates, total households, unemployment, income, demographic trends, housing prices, interest rates, systemic political policy changes, etc. All of these have been ruled out as being major contributors to change in the current apartment market boom. This appendix will give greater detail and explanation about why they are not included in the primary analysis. Note that unemployment, income, housing prices, interest rates and systemic political policy changes have all been briefly discussed in Chapter 2, Section (A), Market Context - Economy.

The primary focus is the fundamental demand drivers for the apartment market, which are characterized in their relationship between economic drivers and how they fit into the demographic model. The economic drivers will focus on foreclosures and employment; while the demographic model focuses these drivers into changes in housing tenure. Using economic data sources and metrics in this way will be used to calculate demand more precisely in the NAM. Both of these demand data points are delineated at the Tri-County MSA level for both historical and forecast data.

### B. Population

The population estimates and forecast is being cited from a reputable source as a "given" and this is why it is not part of the primary analysis. First, there is a comparison of sources between PSEF and BAO data, to confirm compatibility and external validity within this study, and overall reliability. Then it will cover the following metrics for SMSA (Tri-Co). To confirm this internal validity PSEF and BAO will compare population at two levels of geographic data available: King County and the SMSA (TriCo). Lastly, some scenarios will be run to show some sensitivity testing.

Population is the common metric used to start the analysis and the beginning of each calculation and any significant (>5%) incongruity of this metric will have a ripple effect throughout the rest of the analysis. **Table A41B1** shows the population metrics for the last three decennial Censuses,

estimates for 2011, and forecasts for 2015 and 2016. All incongruities are less than 5%, with the highest incongruity in the 2015 King County forecast at 1.63% difference. This is well within acceptable ranges to enable a comparison. Note that BAO estimates a higher number than PSEF and it is likely due to the difference in methodology. For instance, PSEF relies more on economic data to influence change, whereas BAO relies on pure statistical extrapolation from recent historical data. The recessionary effects lead PSEF to have a lower estimate of in-migration and immigration, which the connection to population is well supported by several studies cited in the literature review.

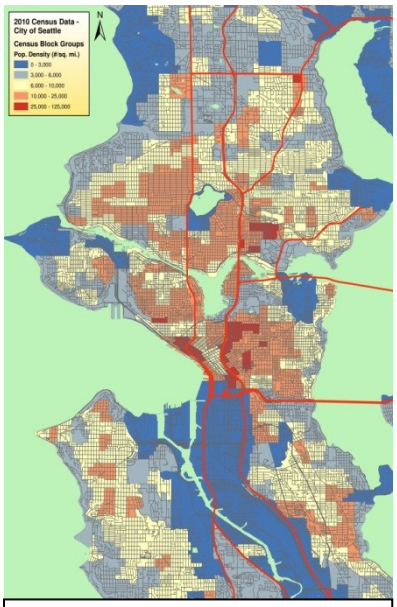
Table A41B1

**PSEF:BAO Comparison of Population Census & Estimates**

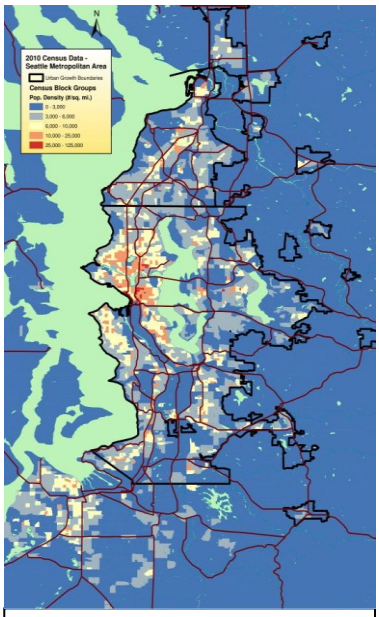
| | 1990 | | 2000 | | 2010 | | 2011 | | 2015 | | 2016 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| King County | Population | % Change | Population | % Change | Population | % Change | Population | % Chang | Population | % Change | Population | % Change |
| PSEF | 1,517,208 | | 1,739,009 | | 1,937,961 | | 1,957,418 | | 2,020,298 | | 2,037,008 | |
| BAO | 1,507,319 | 0.65% | 1,737,303 | 0.10% | 1,936,894 | 0.06% | 1,956,637 | 0.04% | 2,053,695 | 1.63% | 2,062,546 | 1.24% |
| MSA (TriCo) | | | | | | | | | | | | |
| PSEF | 2,578,807 | | 3,052,187 | | 3,449,059 | | 3,479,738 | | 3,627,377 | | 3,668,395 | |
| BAO | 2,559,164 | 0.76% | 3,043,878 | 0.27% | 3,439,809 | 0.27% | 3,480,089 | 0.01% | 3,672,452 | 1.23% | 3,674,054 | 0.15% |

Next, one of these two data sources must be selected for use in the research portion of this thesis. PSEF's data is considered more closely tied to the economy, which is more accurate in measuring population in times of positive economic fluctuation. Since the economy is currently stagnant and not anticipated to grow significantly in the near future, increased population from economic prosperity driven immigration can be mitigated by selected PSEF for its methodological characteristics previously cited. PSEF is the selected data source.

Density maps are also provided below for the 2010 period **MAP A41B1 & A41B2** and can be compared to the density **MAP A41B3** from 2000. [94] This illustrates typical development patterns in both within SKCA and for SMSA. This shows how the SMSA is relatively evenly sprawling in density and this shows that the majority of the population does not live in Seattle proper and by extention in apartments. The apartment market is a small niche in the greater residential market.




**MAP A41B1** 2010 Seattle Density
Source: Build the City




**MAP A41B2** Seattle Density 2010
Source: Build the City


**MAP A41B3**: Seattle MSA Density 2000
Source: 2000 Census

Two scenarios will be run to show sensitivity testing of the impact on the bottom line, defined as the number of units difference at the target submarket. This will be done by annually comounding the selected rate. The current growth rate is at approximately 1.3%/yr. For the high scenario a rate the average rate between 1970-2012 of 1.57% will be applied. For the low scenario the populations growth in the US has an average growth rate of 1% and this will be applied. The high scenario produces a difference of 667 units, which is 17% change to the bottom line. The low scenario produces a difference of -474 units, which is -12% change to the bottom line. A different population estimate could clearly have an important impact and this is why it is being deffered to a more expereinced analyst.

**Population Forecast Reconciliation**

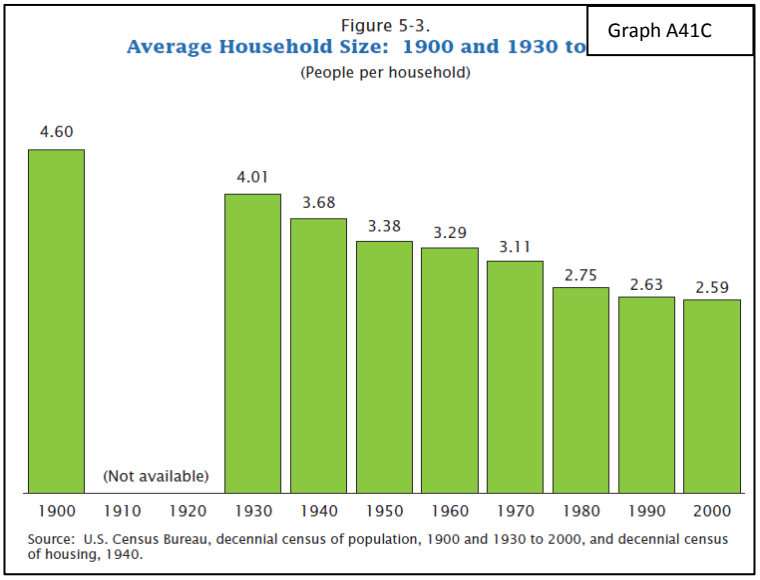
The SMSA (TriCo) population for the last three decennial Censuses, 2011 estimate and 2015-16 forecast are provided below in **Table A41B2**.

**PSEF:BAO Comparison of Population Census & Estimates**

| Table A41B2 | 1990 | 2000 | 2010 | 2011 | 2015 | 2016 |
|---|---|---|---|---|---|---|
| **MSA (TriCo)** | | | | | | |
| **PSEF** | 2,578,807 | 3,052,187 | 3,449,059 | 3,479,738 | 3,627,377 | 3,668,395 |
| **BAO** | 2,559,164 | 3,043,878 | 3,439,809 | 3,480,089 | 3,672,452 | 3,674,054 |

## C. Household Size

Although household formation, headship rates and average household size are an important part of any NAM and can have a large impact on the bottom line, the Census and other data sources do not show any reason to anticipate it diverting from its historic trend beyond historic volatility rates in the next few years. The use of average household size is critical in long-term demographic forecast/projections, but in a short-term forecast like this one, the effect is smaller. Although average household size has been decreasing steadily for the past century, it has started to stabilize in recent decades.[95]




**Graph A4C** shows the rates over the last century and 2010 was 2.58.

Since1900 the largest change in rate was between 1970 and 1980 Census at -12%. The average of all of these rates of change is -6% between Censuses. Since 1990 the rate of change has been -2.1% (-0.0010/year) and this is the rate that is being recommended for forecasting. The most recent Census yielded a rate of change of 0.4%. If this stabilizing trend continues, the actual rate in the next decade will be lower than the recommended forecast rate of -0.0010/yr. The corresponding and supporting SMSA figures are in **Table A3B5.** No non-National Census data prior to 1990 is digitized and challenging to work with. There are some national area reports that do summarize some relevant data, but regional or MSA data must be manually collected. Although an attempt was made to retrieve MSA level data it proved to be too time consuming for the scope of this project.

Despite this limitation, the national data shows a trend that is commonly accepted by demographers. This shows the speed at which the trend rate has changed decreasing slowly, steadily, with very little volatility. Where household size was once 4.6 people/household, it is now below 2.6. If a forecast starts in 2012 and ends in 2016, the starting point in 2011 is an average household size was 2.533 and the total number of households was 1,374,000. Assuming

the trend rate continues at its current speed, by 2016 the annual compounding causes the average household size to be 2.528 and the total household to be 1,463,000 at the MSA level. Between 2011 and 2016 this represents a total change of -0.0005 and 88,780 households. Given the historic data trends, it is more reasonable to assume it will continue to change at its more recent trend rate in the short term.

The only other point of comparison is to show other MSA's average household rates to see if there is a change occurring geographically. Boston has a rate of 2.5, New York is 2.67, Washington D.C. is 2.64, Portland 2.52, San Francisco 2.61, Los Angeles 2.98. Seattle lands on the low end of the spectrum with its 2010 rate of 2.49. This suggests that Seattle is not likely to drop its rate much further without becoming a statistical outlier.

Still there are some demographers that suggest other theories of an imminent radical change to the historic trend rates caused by economic suppression of headship rates that could rebound and this would primarily creating demand for renter markets, thus shifting renter tenure rates higher. If this occurs, it will happen at the same pace as the economy improves, which will compensate for a steep drop off in foreclosure-based demand in renter tenure. Theories like this assume a much higher volatility than witnessed historically and a non-fungible household structure. Although these underlying assumptions are not historically supported, let us try to assess the possible impact some of these theories occur. First, we must rule out two metrics due to lack of data accessibility; comparing Seattle's historic decennial Census data to different Cities or MSA's, and getting a closer look at the Seattle area during the 1980's when the last Microsoft driven apartment boom occurred. Both of these will not be possible. There are a few metrics that are possible and now that the historic trend rate record is stated, there are three metrics of comparison that will be assessed. The first is to simply double the current long-term trend rate from -0.0010 to -0.0020. The second is to estimate some demographers forecast of a 10% change in the average household size between decennial Censuses. The last is to estimate some demographers forecast of a 20% change in average household size between decennial Censuses.

The first scenario doubles the recommended historically based trend rate from 1990 to -0.0020/year. This changes the average household size by decreasing it to 2.523 and the total household size to 1,465,000 at the MSA level. Between 2011 and 2016, this higher rate of change represents a total change of -0.0050 in average household size and a difference of 91,720

households. Comparing this doubling scenario to the recommended historical trend rate shows a total household difference of 2,940 or 3.3% difference for the entire MSA, which is negligible in comparison to the change in renter tenure. By the time that this goes through the NAM's next two levels of assumptions (Renter Tenure and Apt. Capture Rate), which are approximately 40% and 25% respectively, this 2,940 households equates to an additional 290 apartment units to the MSA. In comparison to the approximate 23,500 units being delivered to the MSA, that is a difference of approximately 1.2% of the new stock. This is nothing in comparison to the change in housing tenure.

This second scenario represents a suggested theory that a 10% change in average household size between the decennial Censuses may happen. This would subtract .253 (10%) from the 2010 rate of 2.534 people/household (P/HH), which gives a rate of 2.281 P/HH by 2020, and this equates to (-0.025P/HH/Yr) or a total of -0.12 P/HH between 2011 and 2016. There are a few ways to benchmark this information to better understand what it means. This means that this theories annual rate of -0.025 is 25 times larger than the recommended rate. This also means that a 10% rate of change has happened before, but only once at the national level, and the rates have been much more stable in recent years. The one instance where it did occur was due to the Baby-Boomers and there is no comparable demographic circumstance like this today. With the 2011 rate being 2.533, then this 10% theoretical rate would create an average household size of 2.408 by 2016. This change in the rates creates a total of 1,535,000 households or an additional 161,700 households between 2011 and 2016 and represents an additional 72,880 to the recommended trend rate. Assuming renter tenure rates follow the recommended forecast rates of approximately 40% this will create an additional 29,000 renters to the recommended forecast and equates to a total of 616,800 renters by 2016. Assuming the MSA apartment capture rate also follows the recommended rate of 25% then this creates an additional 7,000 units to the forecast. This brings up the total number of units at the MSA level significantly to a total of 19,000 from 11,000, out of the total 23,478 apartment units being delivered.

This third scenario represents a 20% change in average household size between decennial Censuses. The historic record has no data to suggest a change this large is even possible. There is nothing demographically or economically that would suggest the rate would change by a larger amount than the Baby-Boomers created. For arguments sake, let simply double the 10% scenario from the previous paragraph. This would increase the MSA units by an additional 7,000 units

and push the total to 26,000, in comparison to the 23,000 apartment units expected to be delivered by 2016. Although the developers would be happy to hear this, there is nothing to support it.

Table A41C1

| Census Household Summar | 1990 | 2000 | 2010 | 2011 | 2015 | 2016 |
|---|---|---|---|---|---|---|
| POP | 2,559,164 | 3,043,878 | 3,439,809 | 3,480,089 | 3,672,452 | 3,674,054 |
| Households | 1,002,157 | 1,196,568 | 1,357,475 | 1,373,767 | 1,456,468 | 1,452,200 |
| Average HH Size (Census) | 2.50 | 2.49 | 2.49 | 2.49 | 2.48 | 2.48 |
| Average HH Size (Mathmatic) | 2.554 | 2.544 | 2.534 | 2.533 | 2.521 | 2.530 |

**Table A41C1** shows basic information about households over the last three decennial Censuses for the MSA. Notice that *Average Household (HH) Size* is significantly lower than what is used in the NAM. This is due to decennial Census methodology implementation for calculating *Average Household (HH) Size* conflicting NAM methodological theory. Normal NAM methodology calls for this data points to be used to calculate the next line of the NAM, labeled *Total HH Size*, and here is where the methodological conflict becomes apparent. The standard NAM methodology assumes that the Census methodology follows the same mathematical calculation assumption, *(Total Population * Average HH Size = Total HH's).* The problem is that the Census methodology clearly does something else, although it is not clear exactly what it is doing, based on published documentation.[96] It might be the exclusion of certain groups from being counted like "seasonal", "migrant", or "non-institutionalized", but after skimming the methodology publication, the answer is no clearer now than when I started. Regardless, since *Total number of HH's* is published with each decennial Census, it is possible to establish a mathematically accurate rate for each decennial Census that can be used as a proxy/substitute to complete the NAM. **Table A41C1,** line title: *Average HH Size* (Census) is directly from the Census in 1990, 2000, and 2010. Columns 2011, 2015, and 2016 estimate from BAO, which are all incompatible with the theoretical mathematic methodology of the NAM. The next line of **Table A41C1** is the mathematic proxy, which has been derived from the *Total Population* and *Total HH's* in each of the decennial Censuses to create a mathematically accurate *Average HH Size*. Thus, there are two lines both labeled *Average HH Size,* but one being *(Census)* and the other being labeled *(Mathematic)* or proxy. This *(Mathematic)* proxy line will be used in the NAM. As previously stated the long-term trend rate will be used to determine forecasting of *Average HH Size*. The forecast trend specifically uses the average annualized long-term growth

rate or trend between 1990 and 2010 of -0.0010 people/year. This rate of change is very stable and has almost no impact on the NAM results.

Table A41C2

| Census Household Summary | 1990 | 2000 | 2010 | 2011 | 2015 | 2016 |
|---|---|---|---|---|---|---|
| Households | 1,002,157 | 1,196,568 | 1,357,475 | 1,373,767 | 1,456,468 | 1,452,200 |
| Average HH Size | 2.5 | 2.49 | 2.48 | 2.47 | 2.47 | 2.47 |
| Families | 654,101 | 757,978 | 858,262 | 855,584 | 909,031 | 896,882 |
| Average Family Size | 3.05 | 3.07 | 3.06 | | 3.06 | |

**Table A41C2** shows a slowly decreasing trend in average household size, while average family size has stayed the same in City of Seattle. **Table A41C3** shows households by housing tenure and mortgage status in the 2010 Census for City of Seattle. These data points were not available in any other Census. Although, there was some other data about household size available in the 2010 Census and some similar information in the two previous Censuses, the format changed between the 2000 Census and 2010 Census. As a result, it was not possible to realign the data set to track a historic trend. There is more household data available in the following tables **A41C4** and **A4c5** that generally break down the household into familial types over the last three Censuses and shows relationships between those in the household, but only over the last two Censuses because the 1990 Census was not available. BAO had some comments about the topic of households stating:

> "The household count in this area has changed from 1,196,568 in 2000 to 1,369,762 in the current year, a change of 1.33 percent annually. The five-year projection of households is 1,456,468, a change of 1.24 percent annually from the current year total. Average household size is currently 2.48, compared to 2.49 in the year 2000. The number of families in the current year is 858,262 in the specified area."

| Total Housing Units by Occupancy | | | | | | Table A41C3 |
|---|---|---|---|---|---|---|
| **Total Housing Units by Occupancy** | **1990** | | **2000** | | **2010** | |
| **Total** | **1,060,127** | **100.00%** | **1,255,502** | **100.00%** | **1,463,295** | **100.00%** |
| Occupied Housing Units | 1,002,157 | 94.5% | 1,196,568 | 95.30% | 1,357,475 | 92.80% |
| Owner Occupied Housing Units | 605,240 | 57.1% | 743,416 | 59.20% | 835,557 | 61.55% |
| Average Household Size | | | 2.60 | | 2.63 | |
| Renter Occupied Housing Units | 396,917 | 37.4% | 453,152 | 36.10% | 521,918 | 38.45% |
| Average Household Size | | | 2.20 | | 2.26 | |
| Vacant Housing Units | 57,970 | 5.5% | 58,934 | 4.70% | 105,357 | 7.20% |
| For Rent | 25,544 | 2.4% | 22,719 | 1.80% | 40,941 | 2.80% |
| Rented, not Occupied | 2,886 | 0.3% | 2,629 | 0.20% | 2,684 | 0.20% |
| For Sale Only | 7,092 | 0.7% | 10,422 | 0.80% | 22,285 | 1.50% |
| Sold, not Occupied | 2,886 | 0.3% | 2,629 | 0.20% | 3,862 | 0.30% |
| For Seasonal/ Recreational/ Occasional Use | 9,994 | 0.9% | 10,155 | 0.80% | 15,645 | 1.10% |
| For Migrant Workers | 27 | 0.0% | 233 | 0.00% | 59 | 0.00% |
| Other Vacancy Rate | 9,541 | 0.9% | 10,148 | 0.80% | 20,344 | 1.40% |
| Total Vacancy Rate | 5.50% | | 4.70% | | 7.20% | |

Table A41C4

| **Households by Type** | **1990** | **2000** | **2010** |
|---|---|---|---|
| Total | 1,002,157 | 1,196,568 | 1,357,475 |
| Households with 1 Person | 265,763 | 331,479 | 385,195 |
| Households with 2+ People | 82,293 | 107,111 | 972,280 |
| Family Household | 654,101 | 757,978 | 845,966 |
| Husband-wife Families | 527,479 | 593,398 | 644,876 |
| With Own Childres | 253,318 | 289,277 | 284,594 |
| Other Family (No Spouse Present) | 126,622 | 164,580 | 201,090 |
| With Own Childres | 82,133 | 110,686 | 111,066 |
| Nonfamily Household | 348,056 | 438,590 | 126,314 |

Table A41C 5

| **Population by Relationship and Household Type** | **2000** | **2010** |
|---|---|---|
| Total | 3,043,878 | 3,439,809 |
| In Households | 2,975,637 | 3,374,336 |
| In Family Households | 2,395,819 | 2,694,292 |
| Householder | 757,978 | 845,966 |
| Spouse | 593,398 | 644,876 |
| Child | 848,034 | 979,396 |
| Other relative | 125,644 | 133,392 |
| Nonrelative | 70,765 | 90,662 |
| In Nonfamily Households | 579,818 | 680,044 |
| In Group Quarters | 68,241 | 65,473 |
| Institutionalized Population | 24,023 | 25,133 |
| Noninstitutionalized Population | 44,218 | 40,340 |

## D. Tenure: Owners/Renters

In 2006 owner occupied housing hit a new record high of approximately 69% nationally. Three years later, it is estimated to have dropped to approximately 65% and still dropping, not including vacancies. BAO summarizes the change between the 2000 Census and 2010 Census by stating (including vacancy):

> "Currently, 57.3 percent of the 1,472,318 housing units in the area are owner occupied; 35.7 percent, renter occupied; and 7.0 are vacant. In 2000, there were 1,255,502 housing units - 59.2 percent owner occupied, 36.1 percent renter occupied and 4.7 percent vacant. The rate of change in housing units since 2000 is 1.57 percent. Median home value in the area is $311,965, compared to a median home value of $157,913 for the U.S. In five years, median value is projected to change by 4.05 percent annually to $380,394. From 2000 to the current year, median home value change by 4.75 percent annually."

| Table A41D1 | West | Census Adjustment | | Seattle MSA |
|---|---|---|---|---|
| Avererage | 39.49 | -0.96 | 38.64 | 38.43 |
| Standard Deviation | 1.70 | 0.98 | 0.89 | 1.25 |
| MIN | 35.28 | -2.34 | | 35.04 |
| MAX | 42.15 | -0.15 | | 40.39 |

The best source of data is a Census-Bureau current population survey – Housing vacancy survey, series H-111.[97] This source measures tenure quarterly by region from 1965 to present. The full results of the survey are in **Appendix A4-3: Census-Bureau Tenure rates (1965-2012)**. This survey data is benchmarked to the Decennial-Census. A summary of combined critical statistics from this benchmarked data are in **Table A41D1**. The only drawback is that the "West Regions" includes the entire west coast, so an adjustment must be made to approximate the SMSA. This is done by benchmarking this survey results to the decennial Census for the SMSA in 1990, 2000 and 2010. These three benchmarks produce the statistics in the first column in the "Census Adjust" area with an average differential, Standard deviation, Minimum, and Maximum. Not that there is a significant difference and this is more pronounced in 1990, with this differential closing by 2010. This means that the SMSA is becoming more like the rest of the west region average. For our purposes, this means that the most recent data is representative of the SMSA. In the next adjustment column, the 38.64% is the average renter tenure rate for the three benchmarked time periods, with a Stand. Dev. of 0.89%. The next columns (SMSA) numbers all represent the long term approximated respective data from 1965-present. This data is what will be most heavily relied upon for the net absorption modeling. **Table A41D2** shows housing tenure, comparing one decennial Census to another across the most recent three decades in the City of Seattle. This gives us the total number of households and more importantly illustrates the elevated vacancy rate in 2010. Although this demonstrates the stability over the long term, it is missing the volatility that occurs in annually and particularly in the most recent decade**.**

| Table A41D2 | Housing Units by Occupancy Status and Tenure | | | | | |
|---|---|---|---|---|---|---|
| Housing Units by Occupancy Status and Tenure | 1990 | | 2000 | | 2010 | |
| | Number | Percent | Number | Percent | Number | Percent |
| Total Housing Units | 1,060,127 | 100.0% | 1,255,502 | 100.0% | 1,472,318 | 100.0% |
| Occupied | 1,002,157 | 94.5% | 1,196,568 | 95.3% | 1,369,762 | 93.0% |
| Owner | 605,240 | 57.1% | 743,416 | 59.2% | 844,173 | 57.3% |
| Renter | 396,917 | 37.4% | 453,152 | 36.1% | 525,589 | 35.7% |
| Vacant | 57,970 | 5.5% | 58,934 | 4.7% | 102,556 | 7.0% |

Historic information from the Census-Bureau on housing tenure can be found in a document titled *Demographic Trends in the 20th*. The relevant date from this document is in **Appendix A4-5**. This data can be difficult to acquire in summarized form. In the event that the any data cannot be found in summarized form, then either find the a cop[y of the original hard copy one Census at a time from the Census-Bureau archives, or get it from combined by several universities and non-Census-Bureau online sources. A sample of Census-Bureau hard copy data can be found showing housing tenure on page 10 as 41.1% average nationally.[98] A sample of a secondary government agency that has kept good records in the similar fashion to Berkley University or Columbia University is the State of Wyoming. Their data goes back to 1900 and shows every state and the national average.[99] Assuming their data is correct, then the national housing tenure average in 1940 was 43.6% and the State of Washington had a 57% home-ownership rate. The discrepancy is likely due to one source including vacancy and the other not including vacancy. A copy of the full table can be found in **Appendix A4-4.**

**Table A41D3** and **A41D4** represent the historic housing units and households in the last three decennial Censuses and an extrapolated forecast based on BAO methodology. This can act as a benchmark for the NAM forecast. Notice that vacancy is rising while foreclosures are clearly starting to decrease. This indicates that the extrapolation method used by BAO is only based on the most recent data points and will need to be adjusted heavily.

| Table A41D3 | Owner : Renter, Unit Tenure Summary (Seattle MSA) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1990 | | 2000 | | 2010 | | 2011 | | 2016 | |
| | Number | % | Number | % | Number | % | Number | % | Number | % |
| Total | 1,002,157 | 100% | 1,196,568 | 100% | 1,357,475 | 100% | 1,373,767 | 100% | 1,452,200 | 100% |
| Owner Occupied Housing Units | 605,240 | 60.39% | 743,416 | 62.13% | 835,557 | 61.55% | 831,802 | 60.55% | 885,238 | 60.96% |
| Renter Occupied Housing Units | 396,917 | 39.61% | 453,152 | 37.87% | 521,918 | 38.45% | 541,965 | 39.45% | 566,962 | 39.04% |

| Housing Units by Occupancy Status and Tenure | | | | | | | | Table A41D4 |
|---|---|---|---|---|---|---|---|---|
| Housing Units by Occupancy Status and Tenure | 1990 | | 2000 | | 2010 | | 2015 | |
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Total Housing Units | 1,060,127 | 100.0% | 1,255,502 | 100.0% | 1,472,318 | 100.0% | 1,573,278 | 100.0% |
| Occupied | 1,002,157 | 94.5% | 1,196,568 | 95.3% | 1,369,762 | 93.0% | 1,456,468 | 92.6% |
| Owner | 605,240 | 57.1% | 743,416 | 59.2% | 844,173 | 57.3% | 898,932 | 57.1% |
| Renter | 396,917 | 37.4% | 453,152 | 36.1% | 525,589 | 35.7% | 557,536 | 35.4% |
| Vacant | 57,970 | 5.5% | 58,934 | 4.7% | 102,556 | 7.0% | 116,810 | 7.4% |

## E. Foreclosures

Foreclosure data is elusive due to this is a new issue for overwhelmed private sector analysts. Its importance is becoming widely known and reaching quasi-academic research.

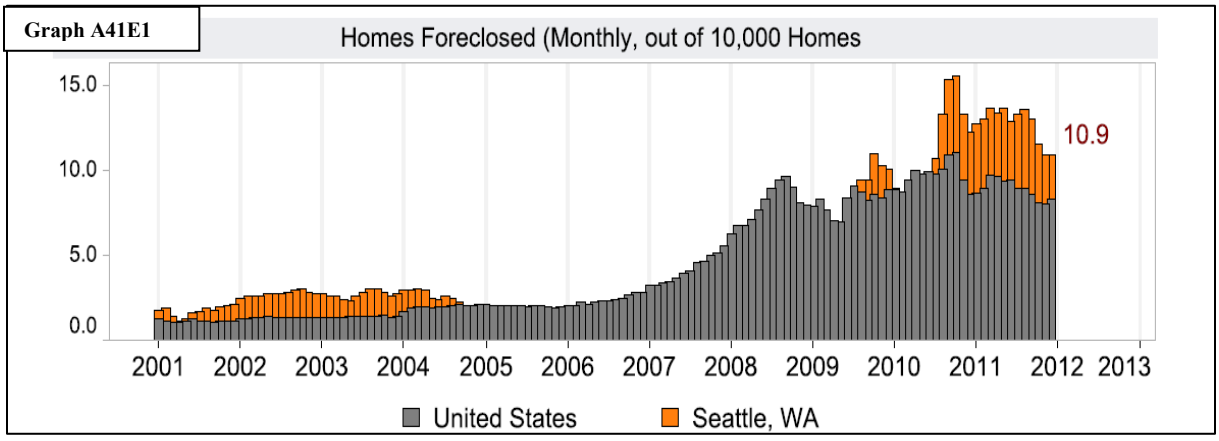
> "The ongoing foreclosure crisis should continue to spur growth in the number of renter households as former owners switch to renting. Single-family home foreclosures will also add a steady flow of units to the rental market. (p.14)" [100]

**Table A41E 1**

| Item | 1990 | 2000 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|
| MORTGAGE ORIGINATIONS | | | | | | | | | |
| **Total (bil. dol.)** | **459** | **1,139** | **3,812** | **2,773** | **2,908** | **2,726** | **2,306** | **1,509** | **2,103** |
| Purchase (bil. dol.) | 389 | 905 | 1,280 | 1,309 | 1,512 | 1,399 | 1,140 | 731 | 739 |
| Refinance (bil. dol.) | 70 | 234 | 2,532 | 1,463 | 1,397 | 1,326 | 1,166 | 777 | 1,364 |
| DELINQUENCY RATES [1] | | | | | | | | | |
| **Total** | **4.7** | **4.4** | **4.7** | **4.5** | **4.5** | **4.6** | **5.4** | **6.9** | **9.3** |
| Prime conventional loans | (NA) | 2.3 | 2.5 | 2.3 | 2.3 | 2.4 | 2.9 | 4.3 | 6.5 |
| Subprime conventional loans | (NA) | 11.9 | 12.2 | 10.8 | 10.8 | 12.3 | 15.6 | 19.9 | 25.5 |
| Federal Housing Administration loans | 6.7 | 9.1 | 12.2 | 12.2 | 12.5 | 12.7 | 12.7 | 13.0 | 14.0 |
| Veterans Administration loans | 6.3 | 6.8 | 8.0 | 7.3 | 7.0 | 6.7 | 6.4 | 7.2 | 7.9 |
| FORECLOSURE RATES | | | | | | | | | |
| **Total loans in foreclosure process [2]** | **0.9** | **1.2** | **1.3** | **1.2** | **1.0** | **1.2** | **2.0** | **3.3** | **4.6** |
| Prime conventional loans | (NA) | 0.4 | 0.6 | 0.5 | 0.4 | 0.5 | 1.0 | 1.9 | 3.3 |
| Subprime conventional loans | (NA) | 9.4 | 5.6 | 3.8 | 3.3 | 4.5 | 8.7 | 13.7 | 15.6 |
| Federal Housing Administration loans | 1.3 | 1.7 | 2.9 | 2.7 | 2.3 | 1.9 | 2.3 | 2.4 | 3.6 |
| Veterans Administration loans | 1.2 | 1.2 | 1.6 | 1.5 | 1.1 | 1.0 | 1.1 | 1.7 | 2.5 |
| Loans entering foreclosure process: [3] | | | | | | | | | |
| Prime conventional loans | (NA) | 0.6 | 0.8 | 0.8 | 0.7 | 0.8 | 1.3 | 2.4 | 3.9 |
| Subprime conventional loans | (NA) | 9.2 | 6.6 | 5.9 | 5.6 | 7.3 | 11.7 | 16.5 | 16.2 |
| Federal Housing Administration loans | 1.7 | 2.3 | 3.6 | 3.9 | 3.4 | 3.3 | 3.6 | 3.8 | 4.8 |
| Veterans Administration loans | 1.6 | 1.5 | 1.9 | 2.0 | 1.5 | 1.4 | 1.6 | 2.3 | 3.0 |

Three different sources will be compared to gage the extent of the problem more accurately. **Table A41E1** shows Federal Financial Institution Examination Council (FFIEC) data, which covers the historical rates of foreclosures at a national level from 1990-2009. The most recent data from 2009 hits a new record high of 4.6% national on a survey of approximately 80% of 1-4 unit mortgage loans. It also shows a break down between prime and subprime mortgages, with subprime clearly leading the way in foreclosures. Unfortunately, there is no update available after 2009.

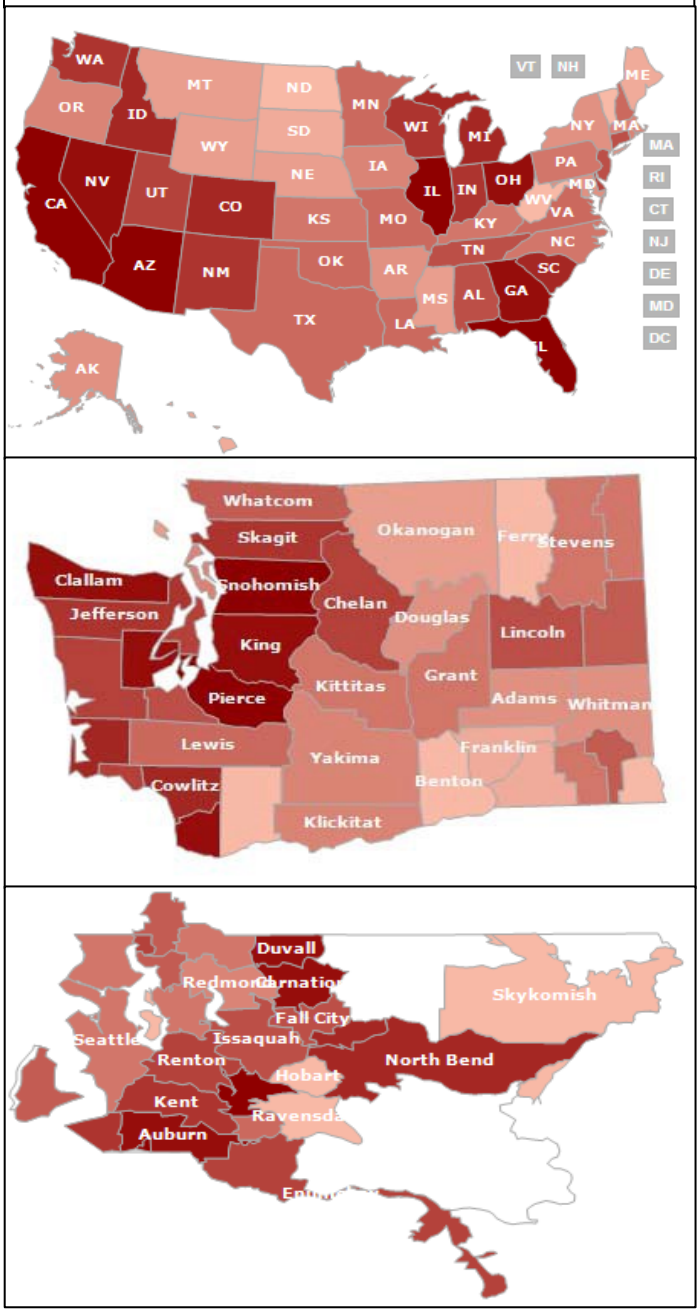
**Graph A41E1**



The home foreclosure markets are still trending above the national average in the greater Seattle area and are not anticipated to return to normal in the immediate future. More importantly, the foreclosure rate is three to five times higher than normal. Both of these concepts are illustrated in the **Graph A41E1**.

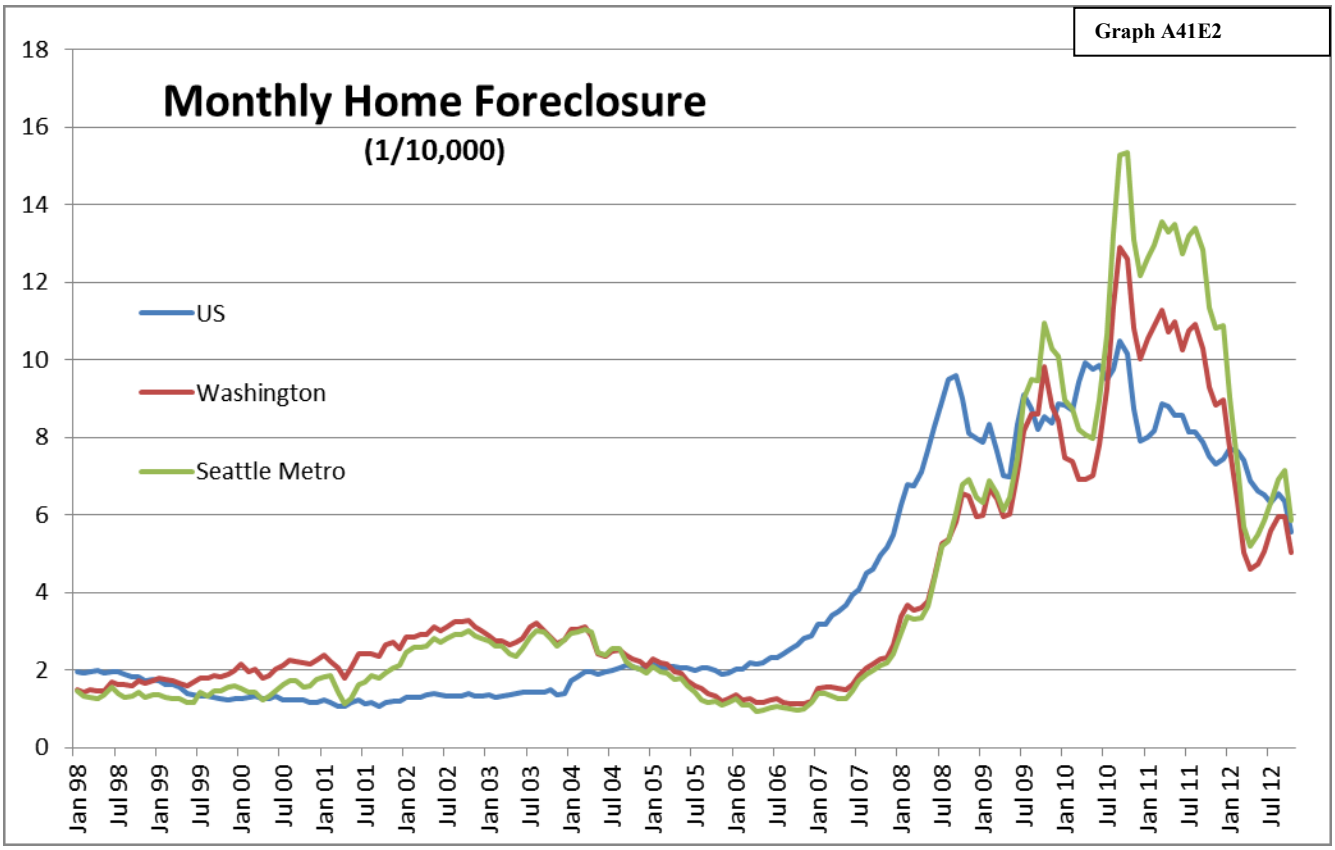
In comparison, RealtyTrac gives a snap shot of foreclosure rates on a map at the national, state and county levels. **MAP A41E** illustrates relative foreclosure rates with the darker the color the higher the foreclosure rate. The State of Washington has a relatively high level nationally. Unfortunately, the SMSA or Tri-County area has the highest combined rates of foreclosure in the state. The City of Seattle has a better rate of foreclosure with in King County in comparison to some of the other Cities.[101] There were 1,183 new filings in the SMSA area in March 2012, out of approximately 1.46 million households. Now there are 2,400 in September of 2012, but the annual average maybe decreasing.

**MAP A41E**



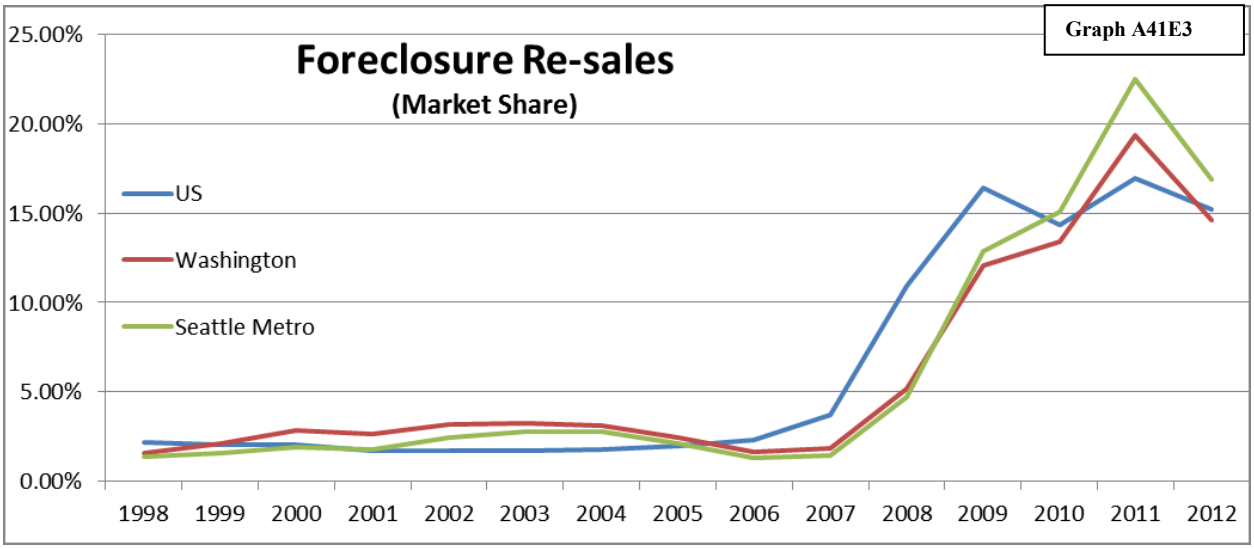

The third source is Zillow and has more longitudinal reports but their definition of Seattle Metro is undefined and clearly smaller than a Tri-County MSA. They do offer extensive time line of detailed data. They define foreclosure as "The number of homes in the US per 10,000

that were foreclosed in any given month. A foreclosure is when a homeowner loses their home to their lending institution or it is sold to a third party at an action."[102] Still this can assist with determining trends and patterns. For instance, **Graph A41E1** shows that the normal rate is approximately two in every 10,000 mortgages, which in Seattle equates to approximately 3,500/ year. Zillow's January report shows the Seattle rate at 9/10,000 with the national average at 8.4.




Zillow's March report counted 7.4/10,000 equating to 12,000 homes/year in the MSA were foreclosures in March 2012, which is slightly less than RealtyTrac, as anticipated for the entire tri-county SMSA. **Graph A41E2** illustrates the last several years of U.S. Foreclosure rates and shows the current rate trend is dropping quickly, although not back to prerecession levels for a few years. The chart illustrates elevated rates since 2008 caused approximately 1% shift in housing tenure every year, equaling a total of 4% shift from owning to renting or 8% shift total. This means a renter tenure shift from approximately 31% to 39% between 2007-2012, which is comparable to Census housing tenure rate data. This report also indicates that there is either a time lag between the Seattle metro rate (6.9) and national average rate (5.7) or that markets are so volatile that the difference from the national averages is random or loosely correlated. Since

Seattle housing market has lagged the national average in many other aspects of the recession, it is fair to assume the same is occurring with foreclosure rates. Given the rates at both the national average and Seattle metro area and the trend of the graph, the lag appears to be approximately 6 months. **Graph A41E3** shows the rate of foreclosed properties for re-sale. This mimics the homes foreclosures in **Graph A41E2** with a slight lag in time for legal process of foreclosure to occur. A full data set for both of these graphs can be found in **Appendix A4-2**.



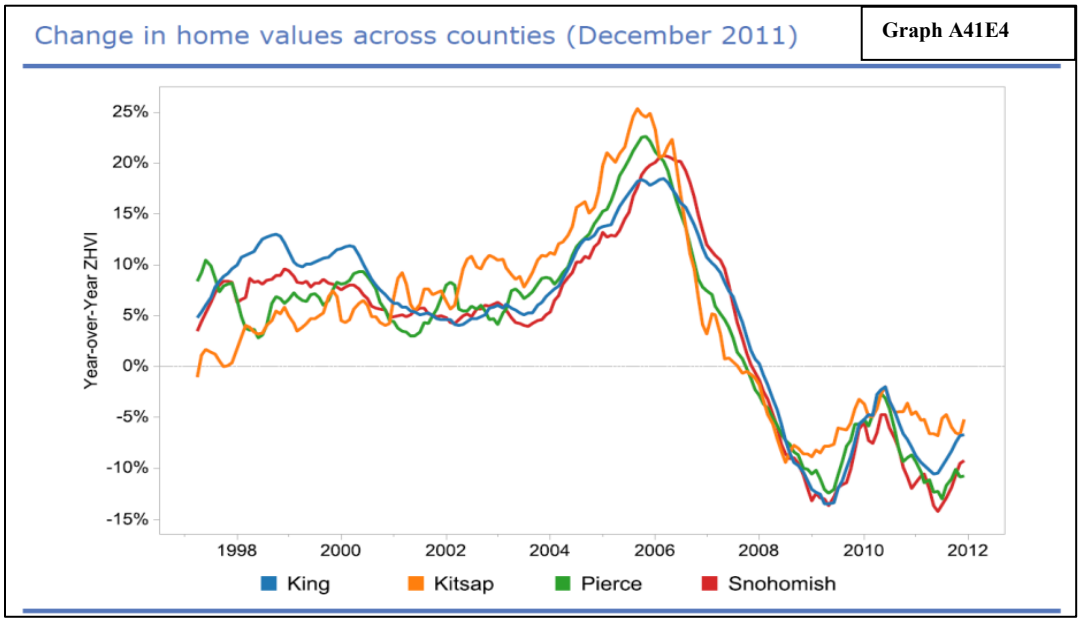

D&S supply side data shows that apartments have absorbed approximately 3,700 of the foreclosure driven demand as shown in **Table A41E2.** The rest must be renting from smaller buildings and in the shadow market. As the shadow market fills, supply will become constrained and then the demand for rentals will turn to the last rentals available, the more expensive apartments.

**Table A41E2**

| Foreclosure assesment | 2009 | 2010 | 2011 |
|---|---|---|---|
| **Stock** | 213,815 | 217,787 | 219,365 |
| **Vacancy** | 7.2% | 5.0% | 5.3% |
| **Vacant Units** | 15,395 | 10,889 | 11,626 |
| **Annual Change** | | -4,505 | 737 |
| **Total Change** | | | **-3,768** |

It is also important to note that location of foreclosures is unevenly spread and focused in poorer areas. There are two similar sources of data for foreclosure info, RealtyTrac and Zillow. [103] Zillow recently released a Seattle foreclosure market overview report addressing the situation in

most of the affected areas on pages 24 & 27. The significant data from this part of the report is represented in both the chart and graph. **Graph A41E4** illustrates the volatility in the housing markets and the low sales values, comparing the four largest counties of the MSA. The City of Seattle is rated is medium compared to other cities in the State of Washington with 2,270 foreclosures, or 1 in 1,700 homes, at a sales price of $235,000. This gives a more comprehensive view of the breakdown from the national level to the local level of the near peak point of the crisis.




Drivers and indicators for foreclosure rates are typically the following three categories: Unemployment, Employment and Income. All of these were discussed briefly in the market context section above at a national level. The SMSA has typically been lagging the rest of the nation in its trends. SMSA unemployment rate was at 8.0% in August 2012 and was at 8.4% a year prior. This is slightly lower than the national average (8.2% August 2012) and the State of Washington average (8.5% August 2012).[104] Although this is an improvement from a year ago, it is still relatively high, and high enough to continue the current trend of foreclosures. Employment has also increased at all levels. The SMSA employment has increase by approximately 15,000 from a year ago to a total of 1,879,800 in August 2012, which is a .8% growth in employment. The State of Washington has increased by approximately 17,000 from a year ago to a total of 3,482,400 in August of 2012. The Nation employment rate is stable, but flat. The employment indicator is also relatively improving slowly and favors the continuation of

the current trend for foreclosure rates.[105] Income has increased nationally by 1.7% and there is no comparable data from the BLS at a more localized level.[106] Census data indicates a modest rise in incomes over the last 30 years, but when adjusted for increases in the cost of living, it has a long slow deceasing trend.[107] This indicates weakness and a possible relapse, if any other parts of the economy falter. All indicators suggest the current foreclosure trend continue to decrease at its current rate. The forecast trend will follow the data collected from the historic demand SMSA section above. To recap, 2011 foreclosures accounted for almost the same amount as the annual growth in renter tenure rate of 20,047.

The cumulative 2011 quarterly data is summarized in **Table A41E3**, although Q1 & Q2 of 2011 data have to be inferred from the **Graph A41E1** and then represented in **Table A41E3**. This data indicates that the SMSA foreclosure rate in 2011 was approximately 19,000 and an additional 1,000 non-foreclosure demand, totaling approximately 20,000 renter tenure household demand.[108] This also indicates that the foreclosure data is not the only driver that creates demand for increasing the annual renter tenure rate. The 2012 quarterly foreclosure rates are at approximately 9/10,000 in Q1-2012, 7.8 in Q2, 6.9 in Q3, and dropping steadily. Assuming a relatively high Q4 rate of 8/10,000 units due to a typical political election induced economic slowdown, then the annual total equates to approximately 12,400 units of demand for renter tenure rate shown in **Table A41E3.**[109]

| Table A41E3 | Foreclosure Rate Forecast | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| Q1 | 2,889 | 3,788 | 4,609 | 3,424 | 2,634 | 1,536 | 1,054 | 878 |
| Q2 | 2,934 | 3,659 | 4,829 | 3,073 | 2,195 | 1,317 | 1,010 | 966 |
| Q3 | 4,089 | 5,731 | 4,763 | 2,985 | 1,756 | 1,097 | 966 | 1,054 |
| Q4 | 4,583 | 5,939 | 4,785 | 2,853 | 1,317 | 1,054 | 922 | 1,141 |
| | 14,495 | 19,118 | 22,116 | 12,336 | 7,902 | 5,004 | 3,951 | 4,039 |

It also shows a quarterly breakdown of all forecast foreclosure rates following the trends set in **Graph A41E2**. **Graph A41E2** clearly illustrates a decreasing trajectory aligning with economic indicators mentioned in the previous paragraph and other sections. Assuming a curvilinear decrease similar to the curvilinear increase between 2005-2008, then multiple decreasing rates must be applied in forecasting. The 2013 rate of -1/10,000/quarter will create a forecast annual foreclosure amount of 9,600 units. The 2014 rate will decrease, following the curvilinear trend, to -0.5/10,000/quarter, which will create a forecast annual foreclosure amount of 6,600 units. The

2015 rate will continue to decrease, following the curvilinear trend and reach pre-recessionary levels in Q2 of 2/10,000 units. Although **Graph A41E2**indicates the long-term rate is at approximately 2/10,000 units, it only goes back to 1998, which is just after mortgage underwriting standards were relaxed in 1997. **Table A41E1**'s 1990 rate and multiyear trends indicate that traditional underwriting standards (before1997) have a lower rate of foreclosure than 2/10,000. Assuming this is the case, then the rate will continue to decrease, but likely to change at a slower rate before bottoming out. This means that after Q2 the rate will continue to decrease to the implied lower long-term average at a rate of -0.2/10,000 in 2015. These dual rates of decrease will create a curvilinear forecast annual foreclosure amount of approximately 3,500 units. The 2016 rate will start with the same decreasing rate of -0.2/10,000 until it reaches 1/10,000 in Q3, at which point it will remain at this lower rate. This forecasts an annual foreclosure rate of approximately 2,000 units.

## F. Employment

Employment is the secondary demand driver. Some professional analyst have noted that demographic demand models tend to overestimate demand in recessions, in comparison to more limiting factors like employment and income (D&S - Apartment advisor report 2012). They have shown how a separate independent economic analysis produces a lower rate of demand. This thesis will integrate both demographic population and economic employment factors into the same model as independent demand drivers and guideposts. PSEF will be used as the source for employment data.

**Table A41F1** shows the most recent historical employment data, although the data goes back to 1970.

| Table A4f1 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Employment (thous.) | 1575 | 1612 | 1647 | 1629 | 1581 | 1572 | 1591 | 1635 | 1688 | 1740 | 1757 | 1667 | 1640 | 1667 |
| Annual Change | 65.3 | 36.7 | 35.0 | -17.9 | -47.8 | -8.7 | 19.0 | 44.1 | 52.1 | 52.6 | 17.3 | -90.1 | -27.6 | 26.8 |
| Growth Rate | 4.1% | 2.3% | 2.1% | -1.1% | -3.0% | -0.6% | 1.2% | 2.7% | 3.1% | 3.0% | 1.0% | -5.4% | -1.7% | 1.6% |

| Table A4f2 | Mean | SD | Min | Max |
|---|---|---|---|---|
| Annual Change | 26.18 | 33.41 | (90.1) | 78.16 |
| Growth Rate | 2.27% | 2.90% | -5.40% | 9.39% |

This creates an opportunity to determine how the employment indicator is performing in any given year against its long-term mean, standard deviation, minimum record limit and maximum record limit. **Table A41F2** shows these basic statistics and this will help the forecast interpretation and guideposts. Now that this historic data is in place we must analyze it's correlation to renter tenure. **Table A41F3** shows that the correlation between total employment and renter tenure is very high at 0.75 or 75%. Although a multiple regression analysis could be the next step in a statistical analysis, this is beyond the parameters of this study.

| Table A41F3 | Household Employment Correlation | | | | | | | | | | | | | | | | | | | Correl. 9 | Correl. 6 | Correl. 8 | Correl. 10 | Correl. 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | | | | | |
| 9) Total Renter HH Census (K) | 459.55 | 460.04 | 453.15 | 450.89 | 455.87 | 447.59 | 439.83 | 445.9 | 450.21 | 473.82 | 487.26 | 501.69 | 521.92 | 541.97 | 556.97 | 567.16 | 574.55 | 579.25 | 582.83 | | | | | |
| 6) Annual Renter HH Growth (K) | 7.829 | 0.4896 | -6.887 | -2.262 | 4.9793 | -8.275 | -7.764 | 6.0691 | 4.3126 | 23.603 | 13.444 | 14.434 | 20.224 | 20.047 | 15.002 | 10.192 | 7.3888 | 4.7006 | 3.586 | 43% | | | | |
| 8) Annual Tenure Volatility | -5E-04 | -0.005 | -0.009 | -0.008 | 0.0009 | -0.009 | -0.01 | 0.0002 | -0.003 | 0.0128 | 0.0049 | 0.0045 | 0.0119 | 0.01 | 0.0065 | 0.0029 | 0.0012 | -0.001 | -0.002 | 43% | 99% | | | |
| 10) Total Employment (K) | 1575 | 1611.7 | 1646.7 | 1628.7 | 1580.9 | 1572.2 | 1591.2 | 1635.4 | 1687.5 | 1740.1 | 1757.5 | 1667.4 | 1639.8 | 1666.6 | 1694 | 1720.5 | 1757.1 | 1798.1 | 1826.3 | **75%** | 36% | 33% | | |
| 11) Annual Emp. Growth (K) | 65.265 | 36.681 | 34.951 | -17.92 | -47.79 | -8.688 | 18.99 | 44.12 | 52.142 | 52.648 | 17.322 | -90.07 | -27.56 | 26.785 | 27.407 | 26.495 | 36.565 | 41.04 | 28.213 | 8% | -4% | -7% | 27% | |
| 12) Annual Emp. Volatility | 0.0414 | 0.0228 | 0.0212 | -0.011 | -0.03 | -0.006 | 0.0119 | 0.027 | 0.0309 | 0.0303 | 0.0099 | -0.054 | -0.017 | 0.0161 | 0.0162 | 0.0154 | 0.0208 | 0.0228 | 0.0154 | 6% | -5% | -8% | 24% | 100% |

The employment forecast will also rely on PSEF forecast amounts and will be taken at face value. **Table A41F4** shows the PSEF forecast employment values. In comparison to **Table A41F1**'s historic statistics, we can see that only 2015 has annual growth rate that is close to the average rate of 2.33%. These forecasts seem conservative since all of the rates are within a standard deviation of the average. From a different perspective, it has already been mentioned that average long-term population growth is 1.54% annually, which means employment is growing at a faster rate almost every year.

| Table A41F4 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|
| Employment (thous.) | 1640 | 1667 | 1694 | 1721 | 1757 | 1798 | 1826 |
| Annual Change | -27.6 | 26.8 | 27.4 | 26.5 | 36.6 | 41.0 | 28.2 |
| Growth Rate | -1.7% | 1.6% | 1.6% | 1.5% | 2.1% | 2.3% | 1.5% |

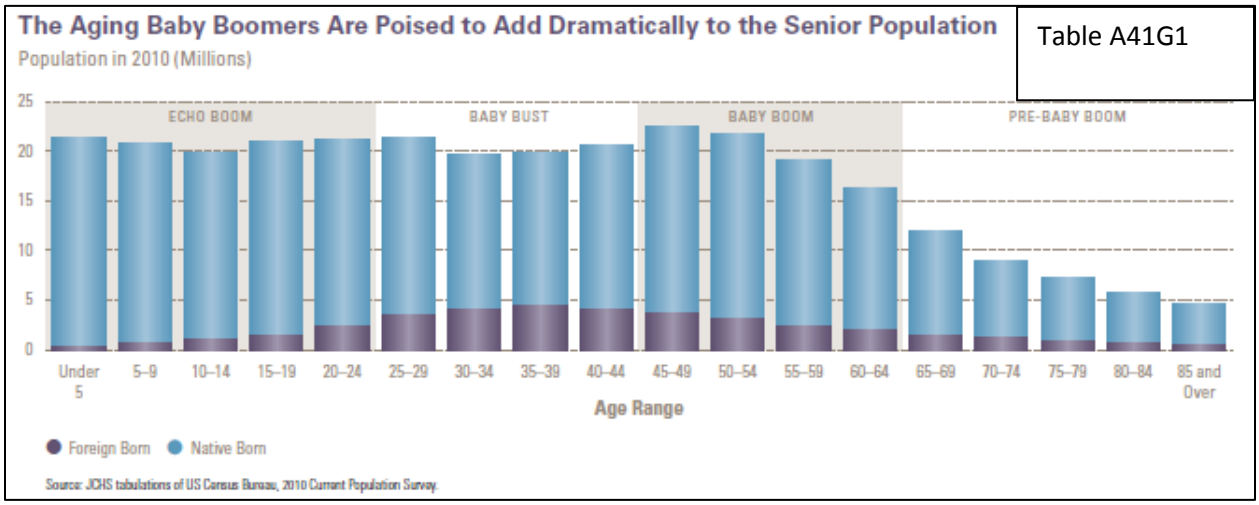
As foreclosure decreases with the economy stabilizing, demand for renter tenure will shift to normal economically drivers.

## G. Demographic Age Cohorts and Immigration

### 1. Baby-Boomers

Demographics are also responsible for a portion of the increase in current demand for the rental market and the question for demographers becomes, how much more demand can we expect? The traditional demographic data typically follows three demographic cohorts; Generation Y, the Baby-Boomers, and Immigration, respectively. These three cohorts are what most demographic literature discusses and point to in national models for long-term projection.

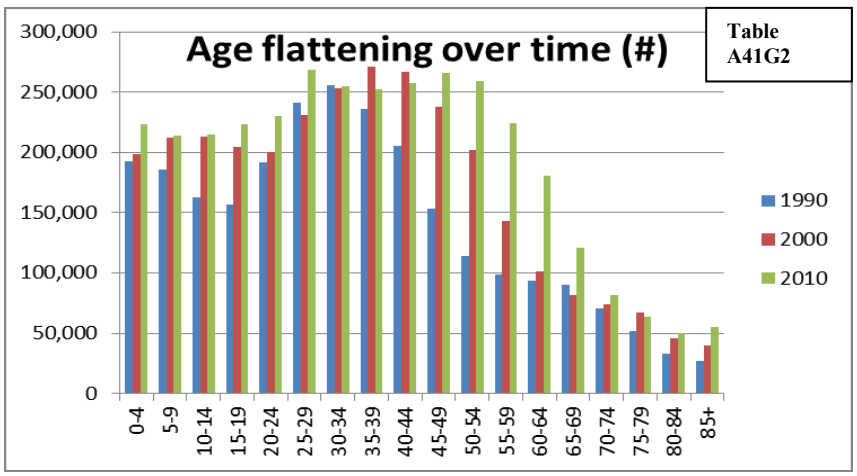
Most demographic literature starts by describing the perspective from the most longstanding cohort, focusing on the Baby-Boomers (Boomers) perspective as they dominated the housing markets over the last several decades. Since WWII, demographic discussion has been dominated by the 75 million Boomers and will continue to focus on this cohort in the foreseeable future.[110]There is the typical demographic data describing the Boomers increase in size from their predecessors. This is approximately a 35% increase in population in the first ten years and approximately 65%-70% increase in the entire 20-year cohort; all in comparison to their predecessors "The Greatest Generation." The Baby Boomer cohort has driven many housing trends; as they have represented a massive and sudden increase in population over a twenty-year period that set the standard for every succeeding cohort. For decades, other cohorts, like the Echo-Boomers, have taken secondary importance in the eyes of the demographic community. This has made for an evolving narrative as the phases of life have passed over the last 60 years, as this massive cohort has forced growth and development to a breakneck pace in some markets and stagnation in others. The residential markets are a great example, while urban apartments did well while the Boomers were young, then were all but abandoned, as the Boomer moved out to the suburban single family home-ownership. This has radically shifted the landscape of the residential real estate market in America in contrast to the rest of the world. This general description is to first describe the boomers, showing why they were so important; second, that this information is generally accepted by the all the demographic sources in the bibliography. The one surprising point that is understated is the recognition that with every year that passes the boomers demographic superiority has slowly diminished.[111]Their strength today may be more in an advantageous lifetime of accumulated wealth, than in raw numbers.



Today, the Boomers are retiring and as they begin this next phase of life, they will certainly effect changes in residential market demand again. This new phase is starting to define itself by moving away from large single-family detached housing. There is a trend moving towards single level, higher density, smaller sized home-ownership, which is a clear 180-degree U-turn from the last 60 years of development.[112] Other variables are less clear about which direction the trend will take. For example the 2010 Census data on geographic relocation is clear in its direction, out of the Northeast and into the South or West, at upwards of 20% of retiring Boomers. Surveys indicate the recession has slowed migration to a halt, resulting in either this migration trend is on hiatus, or stopped permanently.[113] This latter possibility is being coined as "aging in place" and is currently being anticipated as the trend being forecast for the next decade.[114] The more contentious debate is whether the Boomers will move into more urban city centers. Seattle seems to be following this national trend of modest change.[115] So far, the 2010 Census indicates the Boomers have not re-urbanized as much as previously anticipated, but some theorize that they will after the Boomers capacity to live auto-oriented lifestyle is no longer possible.[116] Only time will tell, with politically charged topics like re-urbanization, polarizing the public and alienating a typically republican Boomer demographic.[117] In addition, there will be a transition period where the Boomers will compete to find buyers for their homes that offer a high enough price.[118] Combined this with a shortage of ideal new places to live, which is currently being defined as "smaller, cheaper housing," this creates increased demand and competition between cohorts.[119] Between 1997-2007, one third of the 55-64 year-old homeowners moved and 45% of those moved to smaller homes. Although only a quarter of the older 65-74 year-old cohort moved, 58% of them moved into smaller homes.[120] Regardless of where the Boomers go rental apartments will play a bigger role than ever, through this period of adjustment, while they figure out how to maneuver the next phase of life in the midst of the slow economic recovery.

### 2. Gen-Y

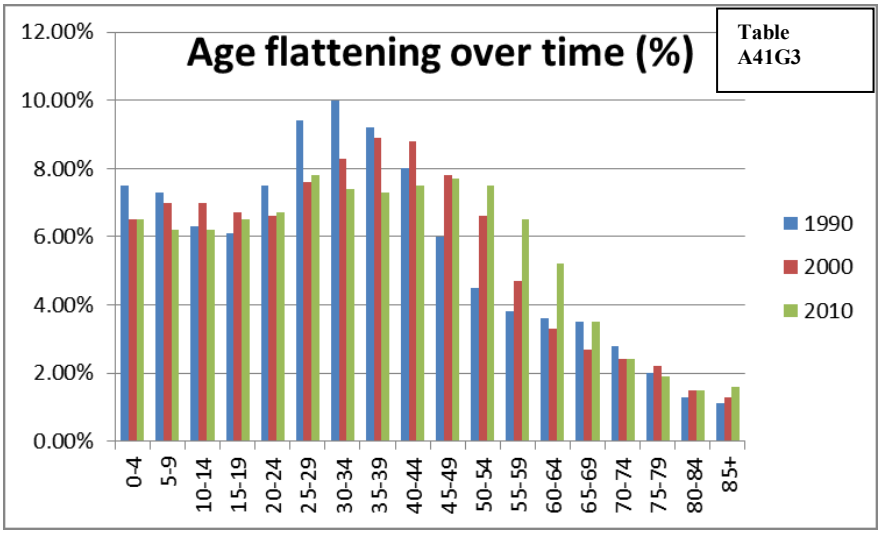
"Gen Y" and other age cohorts will also have an impact on some housing markets and possibly more than other traditional demographic cohorts. Within the demographic profession, "Gen Y" is gaining some notoriety because it is defined so loosely; combining its neighbors, Millennial and Gen X. Although Gen-Y's population size is said to be the biggest since the Baby-Boomers, in truth it is relatively the same as any other preceding cohort including the Baby-Boomers, assuming immigration is included with the native-born population.[121] Every age



cohort under 65 is now approximately 20 million people in size, as shown in **Table A41G1**. For the first time in recent history, America has a working aged population that is equally distributed.

**Table A41G2** shows the SMSA population by 5-year cohort over the last three decennial Censuses. This demonstrates that 50-somethings and then 20-somethings are diving the demographic market in raw numbers in comparison to previous decades. Although, the 20's have a greater impact on the apartment market, there are less of them than Baby-Boomers and the Boomers are not going to voluntarily give up their predominantly ownership tenure status. This means that age cohorts are not showing a great enough change in the SMSA to impact the apartment market enough to explain the change that we have seen in recent years, or to indicate an increased demand in the near future. Between 2000 and 2010, there was an increase of approximately 70,000 20-somethings, which is relatively small in comparison to the housing stock development in this same time.

**Table A41G3** mimics the same concept at the SMSA level as a percentage instead of a numeric volume. This exemplifies that population age cohorts are starting to flatten out and become equal or at least relatively closer in size as a percentage of population. Regardless, the Gen-Y cohort will still create demand in the short run because they are not making the same housing choices as their proceeding cohorts and subsequently changing residential market growth patterns in the process. Demographers often point to a change in the average household size decreasing slowly but surely over the last 30 years. Household size has decreased from 3.2 in 1970 to 2.6 in 1990.[122] This change has most recently being characterized by ULI's 2012 edition of *What's Next* as one of the three critical driving forces in the future unit type development choice. Gen-Y's difference in choice is characterized as living in urban city centers and renting in stimulating places with many amenities. The explanation provided for this change is that Gen-Y's have chosen to defer marriage and children, which reduces their need for larger living spaces. For example, one ULI forecast anticipates that 27% of households will consist of a single person by 2020. This may give rise to a growing demographic group characterized as "women living alone," looking for greater security, and amenities in the places they live. They are more likely to have a longer tenure in the apartment market than their preceding age cohorts, thus causing greater demand. The recession is exacerbating this trend of



delay traditional lifecycle progression towards detached single-family home-ownership in the suburbs. This is partially due to a culmination of factors like, high unemployment, lower wages when employed, generationally elongated single-adult life-phase, and resulting in Census data showing postponed marriage, children, household formation, and headship creation.[123] This may be a temporary suppression of normal rates due to the economic recession and could likely have bounce back effect as the economy improves.[124] Once their housing choices begin to show a stable trend, then analyst's reports and forecasts will start to reflect it for future development.

### 3. Immigration

The last part of this American demographic puzzle is immigration, the only non-age based traditional cohort. In the past, Immigrants have helped to smooth out population growth drops, like with the Echo-Boomers in the 90's. Normal population replacement equilibrium is at 2.1%. America has long had a decreasing native population rate of approximately 1.7% and like many other first world countries, it is dropping lower.[125] The difference is that America also has a long controversial history of immigration that can counter balance this effect. Although the popularity of immigration policy has waned at times, Immigrants have arrived legally to America since the immigration reform act of 1965. However, Immigrants cannot answer to the current housing problem or explain the sudden increase in demand for rental and apartment markets. Prior to the mortgage meltdown Dowell Myers had suggested that Immigrants would fill the housing gap and buy the Boomers houses and he has been relatively quiet since. Even at their currently low sale prices, Immigrants and their children may not be able to afford or want the Boomers houses.[126] This removes Immigration as a possible solution to the Boomers current housing sell-off problems. Assuming the Immigrants from the 90's and their children don't buy the McMansion in the suburbs, then the rental and apartment markets will likely see some increase in demand from second generation immigrants, but this doesn't address recent Immigrants.

Although Immigrants have a long history of being a source of demand for rental and apartment markets, this last decade had relatively low immigration rate and they don't have the volume to flood the rental and apartment markets like what has happened since 2008 (p.12).[127] Several demographers are citing the weak and slowly recovering economy as the primary source of not attracting the typical levels of immigration, specifically in the last portion of the previous decade.[128] This is based on the idea that economic growth induces immigration through a trickledown effect when the economy, as a whole, is stimulated.[129] This has "stalled" immigration when counted at the decennial Census at a total of 800,000 for the entire decade (p.12).[130] One could speculate that some Immigrants have returned to their home countries, and if so are likely continuing to do so now. On a slightly different point, some have also pointed to the tightening of immigration policy in the last decade. Immigration levels are significantly lower in the 2000's than at the peak of the 90's, when it was around 800,000/year. The 90's influx of Immigrants filled the gap in the population trough of the Echo-Boomer. This current low rate of Immigration is not likely to change any time soon with current employment opportunities being few and fiercely competitive.

However, if the economy recovers quickly and immigration increases correspondingly, then new Immigrants will also compete with the foreclosures households, Baby-Boomers, Gen-Y's, and old or second generation Immigrants for space in the rental apartment markets. Immigration may have a larger negative effect on rental housing markets in the short run than currently predicted in the available literature, partially due to the normal lag in information collection and analysis. The most recent economic indicators of growth have been pointing in a slightly positive direction. This effectively cuts out any of the three traditional demographic age cohorts from being likely primary factors in explaining the sudden increase in demand or solving the any housing problems in the near future.

## H. National Demographic Demand Analysis

Surprisingly, all of the literature discusses the increase in demand for rental housing and points at various drivers, but none of them describe this demand with a total national amount or number to characterize it. This makes all of their efforts somewhat futile if they are not benchmarked. Having context is critical in order to orient the demand driver issue for the apartment markets and can be accomplished with some basic decennial Census data. This will allow the rest of the data to be framed and give a better understand of the rest of the numbers and amounts that have been discussed at a national level.

The 2000 Census can illuminate by framing the issue with several baseline statistics.[131]

- Total Population: 248 million
- Households: 91.9 million
- Housing Units: 115.9 million
- Occupied Housing Units: 105.5 million or 91.0%
- Vacancy Rate: 9.0%
- Owner Occupied Units: 69.8 million or 60.2%
- Renter Occupied Units: 35.6 million or 40.8%

The 2010 Census can illuminate by framing the issue with several benchmarks.[132]

- Total Population: 308 million
- Households: 116.7 million
- Housing Units: 131.7 million
- Occupied Housing Units: 116.7 million or 88.6%
- Vacancy Rate: 11.4%
- Owner Occupied Units: 75.9 million or 65.1%
- Renter Occupied Units: 40.7 million or 34.9%

The peak ownership rate was approximately 69.9% in 2006 and shifted by 4.8% by 2010. This 4.8% shift from owning to renting represents the sudden increase in demand that is the current

point of focus. Of the 116.7 million occupied households, this 4.8% shift approximately represents 5.6 million households shifting to renting by 2010. Given the sudden strong change in direction of the home-ownership trend and the remaining 4.9 million household discrepancies between the 2000 and 2010 rate of foreclosure, it seems likely that this 5.6 million shift has continued to increase in 2011 and 2012. Foreclosure households make the best case for the increase in demand that is occurring today. The 9 million household housing tenure shift nationally from the home-ownership to renting since 2008 is comparable in size to the volume of foreclosure households. Other traditional demographic groups like age cohorts are not showing any change that matches the large volume being witnessed in the demand for rentals and apartment markets.

Benchmarking this volume in demand to immigration is relatively the same as the record high amount of immigration America experienced cumulatively in the 90's, which this level of immigration is not possible in the post-2008 recessionary economy. In addition, the 2010 Census definitively shows that the level of immigration is almost flat over the last decade. In comparison, only a small percentage of the 1.85 million Baby-Boomer households retiring every year are switching to renting from ownership. The last traditional demographic cohort, Gen-Y is anticipated to be the first of these demographic groups to reenter the market since the 2008 crash. They are anticipated to have a slightly higher degree of impact on demand, but this will be suppressed until the economy improves. Gen-Y's approximate 3 million household potential is not moving yet. None of the demographic cohorts are currently creating the massive increase in demand that is comparable to the current increase in demand experienced by the rental markets in general and the apartment market niche specifically.

Looking at all four of these economic and demographic factors from the perspective of competition for limited supply, begins to show an explanation for the record high demand being experienced today. Foreclosed households, Gen-Y, and Immigrants will likely be looking for the same kind of product, at similar price points, causing a spike in demand. There may even be a few other random competitors from cohorts like the Baby-Boomers that only have a similar income bracket as a common demographic factor. Regardless, of the current record high level of demand's percentage split of composition, it is clear that foreclosure driven housing tenure shift accounts for a large majority today.

## I. Sources and Limitations

Data sources will come from several places for several reasons. The source of population data will be the Puget Sound Economic Forecaster (PSEF), due to its focus on the Seattle region and use of an economically based forecasting methodology. ESRI's Business Analyst Online (BAO) also has information to contribute, but will be considered a secondary source due to its method of extrapolation of data from Census, ACS, BLS, etc. In addition, it is disconnected from economic

indicators for forecasting. Other sources of data were considered and eventually relegated to tertiary positions for various reasons. These other sources were American Fact Finder 2, BLS, ACS, Puget Sound Regional Council, King County, Peirce County, Snohomish County and the City of Seattle. Although, all of them cover similar subjects, each gathers data from different sources have different methodologies, have different interfaces and limitations.

The primary hurtle to using PSEF instead of BAO is that PSEF uses a 4 counties data set for the SMSA, but they also offer each counties data individually, making a recombination possible. PSEF's data needs to be recombined to match with the supply of building stock data from Dupre & Scott (D&S), which uses a 3 county for the SMSA and cannot be expanded. Kitsap Co. is the fourth additional county being excluded by D&S. Kitsap Co. is a small county relative to the other three counties, with little to no institutional grade apartment stock or impact on regional economics. The county boundaries are well established and this method of reconstruction should work seamlessly. In comparison, BAO interface can be customized easily to any geography. BAO also has a data limitation. For instance, not providing year by year data the way PSEF does. Their estimates either are to 2015 or out five year forward of the most recent completed year, 2016.

BAO does provide a profiling report that is uniquely appealing. It takes demographic data and determines which of the 66 profiles are most prevalent in the area. These profiles of the population area are defined with a combination of narrative and detailed data. All the profile types have detailed description, which located in **Appendix A4-6**. BAO's source of data is a combination of Census, American Communities Survey, Bureau of Labor Statistics, etc. Full description of ESRI BAO's sources can be found on BAO's website or upon request do to its length. [133]

## Appendix A4-2: Foreclosure data set

| Historic Foreclosure | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Region Name** | **1998** | **1999** | **2000** | **2001** | **2002** | **2003** | **2004** | **2005** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** |
| **Homes Foreclosed** | | | | | | | | | | | | | | | |
| US | 22.621 | 16.866 | 14.956 | 13.789 | 15.996 | 16.7 | 23.652 | 24.364 | 28.505 | 49.613 | 95.855 | 97.91 | 113.003 | 97.374 | 67.515 |
| Washington | 18.917 | 21.328 | 24.963 | 27.926 | 36.648 | 34.239 | 30.815 | 20.524 | 14.366 | 22.581 | 57.742 | 90.546 | 110.478 | 123.692 | 55.983 |
| Seattle Metro | 16.35 | 16.251 | 18.346 | 20.533 | 33.038 | 32.324 | 30.121 | 18.307 | 12.509 | 20.427 | 57.615 | 99.056 | 130.648 | 151.141 | 64.816 |
| SMSA Total Volume | 2,392 | 2,378 | 2,685 | 3,005 | 4,834 | 4,730 | 4,408 | 2,679 | 1,830 | 2,989 | 8,431 | 14,495 | 19,118 | 22,116 | 9,485 |
| | | | | | | | | | | | | | | | |
| **Foreclosure Resales** | | | | | | | | | | | | | | | |
| US | 2.22% | 2.08% | 2.04% | 1.70% | 1.73% | 1.70% | 1.81% | 2.01% | 2.31% | 3.74% | 10.96% | 16.37% | 14.32% | 16.90% | 15.23% |
| Washington | 1.58% | 2.13% | 2.88% | 2.64% | 3.22% | 3.29% | 3.10% | 2.45% | 1.65% | 1.84% | 5.18% | 12.05% | 13.42% | 19.34% | 14.59% |
| Seattle Metro | 1.37% | 1.61% | 1.94% | 1.79% | 2.47% | 2.80% | 2.80% | 2.13% | 1.35% | 1.45% | 4.73% | 12.86% | 15.09% | 22.46% | 16.85% |

| Historic Foreclosure | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Region Name** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **Mean** | **Median** | **SD** | **Min** | **Max** |
| **Homes Foreclosed** | | | | | | | | | | | |
| US | 49.613 | 95.855 | 97.91 | 113.003 | 97.374 | 67.515 | 46.581 | 24.364 | 37.041 | 13.789 | 113 |
| Washington | 22.581 | 57.742 | 90.546 | 110.478 | 123.692 | 55.983 | 46.05 | 30.815 | 35.032 | 14.366 | 123.69 |
| Seattle Metro | 20.427 | 57.615 | 99.056 | 130.648 | 151.141 | 64.816 | 48.099 | 30.121 | 44.549 | 12.509 | 151.14 |
| SMSA Total Volume | 2,989 | 8,431 | 14,495 | 19,118 | 22,116 | 9,485 | 7,038 | 4,408 | 6,519 | 1,830 | 22,116 |
| | | | | | | | | | | | |
| **Foreclosure Resales** | | | | | | | | | | | |
| US | 3.74% | 10.96% | 16.37% | 14.32% | 16.90% | 15.23% | 6.34% | 2.22% | 6.31% | 1.70% | 16.90% |
| Washington | 1.84% | 5.18% | 12.05% | 13.42% | 19.34% | 14.59% | 5.96% | 3.10% | 5.81% | 1.58% | 19.34% |
| Seattle Metro | 1.45% | 4.73% | 12.86% | 15.09% | 22.46% | 16.85% | 6.11% | 2.47% | 6.99% | 1.35% | 22.46% |

# Appendix A4-3: Census-Bureau Tenure rates (1965-2012)

Table 14. Homeownership Rates for the US and Regions: 1965 to Present

| | First Quarter | Second Quarter | Third Quarter | Fourth Quarter | Annual Average | Rental Rate |
|---|---|---|---|---|---|---|
| 1965 | | | | | | |
| United States | 62.9 | 62.9 | 62.9 | 63.4 | 63.0 | |
| Northeast | 57.9 | 57.3 | 57.2 | 58.4 | 57.7 | |
| Midwest | 68.1 | 68.7 | 69.2 | 68.4 | 68.6 | |
| South | 64.9 | 63.8 | 63.7 | 65.4 | 64.5 | |
| West | 57.9 | 59.9 | 59.7 | 59.5 | 59.3 | 40.8 |
| | | | | | | |
| 1966 | | | | | | |
| United States | 63.5 | 63.2 | 63.3 | 63.8 | 63.5 | |
| Northeast | 57.5 | 57.2 | 57.6 | 58.6 | 57.7 | |
| Midwest | 68.8 | 68.5 | 68.6 | 68.1 | 68.5 | |
| South | 65.4 | 64.8 | 65.0 | 65.9 | 65.3 | |
| West | 60.3 | 60.7 | 59.9 | 60.9 | 60.5 | **39.55** |
| | | | | | | |
| 1967 | | | | | | |
| United States | 63.3 | 63.9 | 63.8 | 63.5 | 63.6 | |
| Northeast | 58.4 | 57.4 | 58.6 | 57.9 | 58.1 | |
| Midwest | 67.7 | 69.3 | 67.6 | 68.0 | 68.2 | |
| South | 64.7 | 65.4 | 65.0 | 65.4 | 65.1 | |
| West | 61.2 | 61.8 | 59.8 | 61.1 | 61.0 | **39.03** |
| | | | | | #DIV/0! | |
| 1968 | | | | | #DIV/0! | |
| United States | 63.6 | 64.1 | 64.1 | 63.6 | 63.9 | |
| Northeast | 59.5 | 59.1 | 59.1 | 58.9 | 59.2 | |
| Midwest | 67.7 | 69.5 | 69.7 | 68.6 | 68.9 | |
| South | 65.0 | 64.6 | 65.2 | 65.0 | 65.0 | |
| West | 60.5 | 61.8 | 60.3 | 59.9 | 60.6 | **39.38** |
| | | | | | #DIV/0! | |
| 1969 | | | | | #DIV/0! | |
| United States | 64.1 | 64.4 | 64.4 | 64.4 | 64.3 | |
| Northeast | 58.8 | 58.8 | 59.4 | 58.3 | 58.8 | |
| Midwest | 69.2 | 69.7 | 69.5 | 70.5 | 69.7 | |
| South | 65.2 | 65.4 | 65.6 | 65.9 | 65.5 | |
| West | 61.7 | 61.8 | 61.2 | 60.3 | 61.3 | **38.75** |
| | | | | | #DIV/0! | |
| 1970 | | | | | #DIV/0! | |
| United States | 64.3 | 64.0 | 64.4 | 64.0 | 64.2 | |
| Northeast | 58.5 | 58.2 | 58.0 | 57.8 | 58.1 | |
| Midwest | 70.0 | 69.3 | 69.6 | 69.3 | 69.6 | |
| South | 66.0 | 66.3 | 66.4 | 65.5 | 66.1 | |
| West | 60.4 | 59.4 | 61.4 | 61.3 | 60.6 | **39.38** |
| | | | | | #DIV/0! | |
| 1971 | | | | | #DIV/0! | |
| United States | 64.0 | 64.1 | 64.4 | 64.5 | 64.3 | |
| Northeast | 58.4 | 58.2 | 59.0 | 58.4 | 58.5 | |
| Midwest | 69.4 | 69.3 | 69.3 | 69.4 | 69.4 | |
| South | 66.2 | 66.3 | 66.2 | 66.9 | 66.4 | |
| West | 59.3 | 59.4 | 60.9 | 61.0 | 60.2 | **39.85** |
| | | | | | #DIV/0! | |
| 1972 | | | | | #DIV/0! | |
| United States | 64.3 | 64.5 | 64.3 | 64.4 | 64.4 | |
| Northeast | 58.4 | 58.6 | 59.1 | 58.5 | 58.7 | |
| Midwest | 68.8 | 69.8 | 68.9 | 69.7 | 69.3 | |
| South | 66.8 | 67.0 | 65.7 | 66.0 | 66.4 | |
| West | 60.7 | 60.1 | 61.8 | 61.3 | 61.0 | **39.03** |
| | | | | | #DIV/0! | |
| 1973 | | | | | #DIV/0! | |
| United States | 64.9 | 64.4 | 64.4 | 64.4 | 64.5 | |
| Northeast | 58.9 | 58.3 | 57.9 | 58.4 | 58.4 | |
| Midwest | 70.6 | 70.2 | 70.4 | 70.7 | 70.5 | |
| South | 67.3 | 66.2 | 66.6 | 66.0 | 66.5 | |
| West | 59.8 | 61.0 | 60.0 | 60.2 | 60.3 | **39.75** |
| | | | | | #DIV/0! | |
| 1974 | | | | | #DIV/0! | |
| United States | 64.8 | 64.8 | 64.6 | 64.4 | 64.7 | |
| Northeast | 59.0 | 59.2 | 58.8 | 58.3 | 58.8 | |
| Midwest | 69.9 | 70.6 | 71.1 | 70.0 | 70.4 | |
| South | 66.8 | 66.4 | 66.0 | 66.2 | 66.4 | |
| West | 61.2 | 60.4 | 60.1 | 60.7 | 60.6 | **39.40** |
| | | | | | #DIV/0! | |
| 1975 | | | | | #DIV/0! | |
| United States | 64.4 | 64.9 | 64.6 | 64.5 | 64.6 | |
| Northeast | 59.4 | 59.6 | 59.1 | 58.9 | 59.3 | |
| Midwest | 69.4 | 71.0 | 70.2 | 70.1 | 70.2 | |
| South | 65.8 | 66.1 | 66.0 | 66.0 | 66.0 | |
| West | 60.9 | 60.5 | 61.0 | 60.9 | 60.8 | **39.18** |
| 1976 | | | | | #DIV/0! | |
| United States | 64.6 | 64.6 | 64.9 | 64.8 | 64.7 | |
| Northeast | 59.4 | 59.7 | 60.1 | 60.1 | 59.8 | |
| Midwest | 70.0 | 69.8 | 69.7 | 69.2 | 69.7 | |
| South | 66.1 | 66.2 | 66.6 | 66.5 | 66.4 | |
| West | 60.9 | 60.4 | 61.1 | 61.1 | 60.9 | **39.13** |
| | | | | | #DIV/0! | |
| 1977 | | | | | #DIV/0! | |
| United States | 64.8 | 64.5 | 65.0 | 64.9 | 64.8 | |
| Northeast | 60.2 | 59.7 | 60.5 | 60.7 | 60.3 | |
| Midwest | 69.0 | 69.3 | 69.8 | 69.4 | 69.4 | |
| South | 67.2 | 66.7 | 67.2 | 67.4 | 67.1 | |
| West | 60.1 | 59.7 | 60.0 | 59.3 | 59.8 | **40.23** |
| | | | | | #DIV/0! | |
| 1978 | | | | | #DIV/0! | |
| United States | 64.8 | 64.4 | 65.2 | 65.4 | 65.0 | |
| Northeast | 60.3 | 59.9 | 61.5 | 60.5 | 60.6 | |
| Midwest | 69.4 | 68.9 | 69.8 | 69.5 | 69.4 | |
| South | 67.5 | 67.3 | 67.7 | 68.7 | 67.8 | |
| West | 59.2 | 58.7 | 59.1 | 59.6 | 59.2 | **40.85** |
| | | | | | #DIV/0! | |
| 1979 | | | | | #DIV/0! | |
| United States | 65.3 | 65.1 | 66.0 | 65.8 | 65.6 | |
| Northeast | 60.9 | 60.3 | 61.0 | 60.8 | 60.8 | |
| Midwest | 69.1 | 69.2 | 69.9 | 70.3 | 69.6 | |
| South | 68.4 | 68.3 | 69.1 | 68.6 | 68.6 | |
| West | 59.9 | 59.5 | 61.0 | 60.7 | 60.3 | **39.73** |
| | | | | | #DIV/0! | |
| 1979\r1 | | | | | #DIV/0! | |
| United States | 64.8 | 64.9 | 65.8 | 65.4 | 65.2 | |
| Northeast | 60.4 | 60.2 | 60.8 | 60.7 | 60.5 | |
| Midwest | 68.9 | 69.4 | 70.2 | 70.0 | 69.6 | |
| South | 68.1 | 67.8 | 68.8 | 68.3 | 68.3 | |
| West | 58.9 | 59.4 | 60.6 | 59.9 | 59.7 | |
| | | | | | #DIV/0! | |
| 1980 | | | | | #DIV/0! | |
| United States | 65.5 | 65.5 | 65.8 | 65.5 | 65.6 | |
| Northeast | 60.7 | 60.8 | 61.1 | 60.5 | 60.8 | |
| Midwest | 69.6 | 69.4 | 70.0 | 70.1 | 69.8 | |
| South | 69.1 | 68.6 | 68.9 | 68.3 | 68.7 | |
| West | 59.4 | 60.2 | 60.3 | 60.1 | 60.0 | **40.00** |
| | | | | | #DIV/0! | |
| 1981 | | | | | #DIV/0! | |
| United States | 65.6 | 65.3 | 65.6 | 65.2 | 65.4 | |
| Northeast | 60.2 | 60.4 | 61.7 | 60.8 | 60.8 | |
| Midwest | 70.1 | 69.7 | 69.6 | 69.6 | 69.8 | |
| South | 69.1 | 68.0 | 68.0 | 67.8 | 68.2 | |
| West | 59.8 | 60.3 | 60.8 | 59.9 | 60.2 | **39.80** |
| | | | | | #DIV/0! | |
| 1982 | | | | | #DIV/0! | |
| United States | 64.8 | 64.9 | 64.9 | 64.5 | 64.8 | |
| Northeast | 60.7 | 60.8 | 61.9 | 61.1 | 61.1 | |
| Midwest | 69.5 | 69.8 | 69.3 | 69.1 | 69.4 | |
| South | 67.1 | 66.8 | 66.5 | 66.5 | 66.7 | |
| West | 59.3 | 59.8 | 60.0 | 58.7 | 59.5 | **40.55** |
| | | | | | #DIV/0! | |
| 1983 | | | | | #DIV/0! | |
| United States | 64.7 | 64.7 | 64.8 | 64.4 | 64.7 | |
| Northeast | 61.6 | 61.4 | 61.8 | 61.2 | 61.5 | |
| Midwest | 69.6 | 69.6 | 69.3 | 68.9 | 69.4 | |
| South | 66.7 | 66.7 | 67.0 | 67.4 | 67.0 | |
| West | 58.4 | 59.0 | 58.3 | 57.2 | 58.2 | **41.78** |
| | | | | | #DIV/0! | |
| 1984 | | | | | #DIV/0! | |
| United States | 64.6 | 64.6 | 64.6 | 64.1 | 64.5 | |
| Northeast | 61.1 | 61.1 | 61.7 | 60.9 | 61.2 | |
| Midwest | 69.0 | 68.6 | 68.5 | 67.7 | 68.5 | |
| South | 67.2 | 66.8 | 66.8 | 67.2 | 67.0 | |
| West | 58.3 | 59.4 | 59.0 | 57.5 | 58.6 | **41.45** |
| | | | | | #DIV/0! | |
| 1985 | | | | | #DIV/0! | |
| United States | 64.1 | 64.1 | 63.9 | 63.5 | 63.9 | |
| Northeast | 60.8 | 60.9 | 60.8 | 60.8 | 60.8 | |
| Midwest | 67.3 | 67.3 | 66.8 | 66.4 | 67.0 | |
| South | 66.7 | 66.7 | 66.3 | 66.0 | 66.4 | |
| West | 59.0 | 59.2 | 59.3 | 58.5 | 59.0 | **41.00** |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1986 | | | | | #DIV/0! | |
| United States | 63.6 | 63.8 | 63.8 | 63.9 | 63.8 | |
| Northeast | 61.0 | 61.4 | 61.2 | 61.9 | 61.4 | |
| Midwest | 66.5 | 67.0 | 67.2 | 67.0 | 66.9 | |
| South | 66.4 | 66.1 | 66.1 | 65.9 | 66.1 | |
| West | 57.7 | 58.5 | 58.6 | 58.6 | 58.4 | **41.65** |
| | | | | | #DIV/0! | |
| 1987 | | | | | #DIV/0! | |
| United States | 63.8 | 63.8 | 64.2 | 64.1 | 64.0 | |
| Northeast | 61.3 | 61.7 | 61.8 | 61.9 | 61.7 | |
| Midwest | 66.8 | 67.3 | 67.8 | 67.2 | 67.3 | |
| South | 66.5 | 66.0 | 66.2 | 66.4 | 66.3 | |
| West | 58.1 | 58.3 | 58.9 | 58.6 | 58.5 | **41.53** |
| | | | | | #DIV/0! | |
| 1988 | | | | | #DIV/0! | |
| United States | 63.7 | 63.7 | 64.0 | 63.8 | 63.8 | |
| Northeast | 61.5 | 61.3 | 61.5 | 60.8 | 61.3 | |
| Midwest | 67.2 | 67.3 | 67.6 | 67.8 | 67.5 | |
| South | 65.5 | 65.7 | 66.1 | 66.0 | 65.8 | |
| West | 58.7 | 58.4 | 58.7 | 58.2 | 58.5 | **41.50** |
| | | | | | #DIV/0! | |
| 1989 | | | | | #DIV/0! | |
| United States | 63.9 | 63.8 | 64.1 | 63.8 | 63.9 | |
| Northeast | 61.2 | 62.0 | 62.2 | 62.6 | 62.0 | |
| Midwest | 67.8 | 67.8 | 67.9 | 67.0 | 67.6 | |
| South | 66.2 | 65.9 | 66.0 | 65.6 | 65.9 | |
| West | 58.2 | 57.7 | 58.0 | 57.5 | 57.9 | **42.15** |
| | | | | | #DIV/0! | |
| 1990 | | | | | #DIV/0! | |
| United States | 64.0 | 63.7 | 64.0 | 64.1 | 64.0 | |
| Northeast | 62.2 | 62.2 | 63.1 | 62.8 | 62.6 | |
| Midwest | 67.2 | 67.4 | 67.8 | 67.8 | 67.6 | |
| South | 66.3 | 65.8 | 65.2 | 65.7 | 65.8 | |
| West | 58.3 | 57.3 | 58.3 | 58.3 | 58.1 | **41.95** |
| | | | | | #DIV/0! | |
| 1991 | | | | | #DIV/0! | |
| United States | 63.9 | 63.9 | 64.2 | 64.2 | 64.1 | |
| Northeast | 62.0 | 62.1 | 62.7 | 62.7 | 62.4 | |
| Midwest | 67.1 | 66.8 | 67.2 | 67.2 | 67.1 | |
| South | 65.9 | 66.3 | 66.2 | 66.2 | 66.2 | |
| West | 58.5 | 58.3 | 58.9 | 58.9 | 58.7 | **41.35** |
| | | | | | #DIV/0! | |
| 1992 | | | | | #DIV/0! | |
| United States | 64.0 | 63.9 | 64.3 | 64.4 | 64.2 | |
| Northeast | 62.3 | 62.5 | 62.6 | 62.8 | 62.6 | |
| Midwest | 67.5 | 66.5 | 67.5 | 67.3 | 67.2 | |
| South | 65.8 | 65.7 | 65.8 | 66.2 | 65.9 | |
| West | 58.7 | 59.1 | 59.6 | 59.9 | 59.3 | **40.68** |
| | | | | | #DIV/0! | |
| 1993 | | | | | #DIV/0! | |
| United States | 64.2 | 64.4 | 64.7 | 64.6 | 64.5 | |
| Northeast | 62.6 | 62.6 | 62.3 | 62.1 | 62.4 | |
| Midwest | 66.9 | 67.1 | 67.8 | 67.8 | 67.4 | |
| South | 65.8 | 66.0 | 66.4 | 66.3 | 66.1 | |
| West | 59.8 | 60.4 | 60.6 | 60.7 | 60.4 | **39.63** |
| | | | | | #DIV/0! | |
| 1993\r2 | | | | | #DIV/0! | |
| United States | 63.7 | 63.9 | 64.2 | 64.2 | 64.0 | |
| Northeast | 62.0 | 62.0 | 61.7 | 61.5 | 61.8 | |
| Midwest | 66.6 | 66.8 | 67.4 | 67.5 | 67.1 | |
| South | 65.3 | 65.5 | 66.0 | 65.8 | 65.7 | |
| West | 59.2 | 59.9 | 60.1 | 60.2 | 59.9 | |
| | | | | | #DIV/0! | |
| 1994 | | | | | #DIV/0! | |
| United States | 63.8 | 63.8 | 64.1 | 64.2 | 64.0 | |
| Northeast | 61.7 | 61.3 | 61.4 | 61.4 | 61.5 | |
| Midwest | 66.8 | 67.5 | 67.9 | 68.6 | 67.7 | |
| South | 65.6 | 65.2 | 66.0 | 65.7 | 65.6 | |
| West | 59.5 | 59.7 | 59.0 | 59.6 | 59.5 | **40.55** |
| | | | | | #DIV/0! | |
| 1995 | | | | | #DIV/0! | |
| United States | 64.2 | 64.7 | 65.0 | 65.1 | 64.8 | |
| Northeast | 61.9 | 62.3 | 62.2 | 61.6 | 62.0 | |
| Midwest | 67.9 | 68.5 | 70.1 | 70.1 | 69.2 | |
| South | 66.1 | 66.5 | 66.6 | 67.5 | 66.7 | |
| West | 58.9 | 59.8 | 59.1 | 59.0 | 59.2 | **40.80** |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1996 | | | | | #DIV/0! | |
| United States | 65.1 | 65.4 | 65.6 | 65.4 | 65.4 | |
| Northeast | 61.4 | 62.3 | 62.8 | 62.3 | 62.2 | |
| Midwest | 70.4 | 70.5 | 70.7 | 70.8 | 70.6 | |
| South | 67.5 | 67.2 | 67.5 | 67.6 | 67.5 | |
| West | 58.9 | 59.8 | 59.2 | 58.9 | 59.2 | **40.80** |
| | | | | | #DIV/0! | |
| 1997 | | | | | #DIV/0! | |
| United States | 65.4 | 65.7 | 66.0 | 65.7 | 65.7 | |
| Northeast | 61.6 | 62.4 | 63.0 | 62.7 | 62.4 | |
| Midwest | 70.6 | 70.3 | 70.7 | 70.4 | 70.5 | |
| South | 67.8 | 68.1 | 68.2 | 67.8 | 68.0 | |
| West | 59.0 | 59.9 | 59.8 | 59.8 | 59.6 | **40.38** |
| | | | | | #DIV/0! | |
| 1998 | | | | | #DIV/0! | |
| United States | 65.9 | 66.0 | 66.8 | 66.4 | 66.3 | |
| Northeast | 62.4 | 62.7 | 63.4 | 62.0 | 62.6 | |
| Midwest | 70.6 | 70.3 | 71.7 | 71.5 | 71.0 | |
| South | 68.2 | 68.4 | 68.8 | 69.0 | 68.6 | |
| West | 60.1 | 60.3 | 61.1 | 60.4 | 60.5 | **39.53** |
| | | | | | #DIV/0! | |
| 1999 | | | | | #DIV/0! | |
| United States | 66.7 | 66.6 | 67.0 | 66.9 | 66.8 | |
| Northeast | 62.7 | 62.8 | 63.6 | 63.2 | 63.1 | |
| Midwest | 71.2 | 71.2 | 72.1 | 72.5 | 71.8 | |
| South | 69.2 | 68.9 | 69.3 | 69.1 | 69.1 | |
| West | 61.0 | 61.3 | 60.8 | 60.6 | 60.9 | **39.08** |
| | | | | | #DIV/0! | |
| 2000 | | | | | #DIV/0! | |
| United States | 67.1 | 67.2 | 67.7 | 67.5 | 67.4 | |
| Northeast | 63.3 | 63.4 | 63.9 | 63.2 | 63.5 | |
| Midwest | 72.2 | 72.2 | 72.9 | 73.1 | 72.6 | |
| South | 69.5 | 69.2 | 69.7 | 69.8 | 69.6 | |
| West | 61.3 | 61.9 | 62.2 | 61.6 | 61.8 | **38.25** |
| | | | | | #DIV/0! | |
| 2001 | | | | | #DIV/0! | |
| United States | 67.5 | 67.7 | 68.1 | 68.0 | 67.8 | |
| Northeast | 63.6 | 63.2 | 64.1 | 64.0 | 63.7 | |
| Midwest | 73.2 | 72.7 | 72.9 | 73.5 | 73.1 | |
| South | 69.3 | 69.7 | 70.1 | 70.1 | 69.8 | |
| West | 62.0 | 62.9 | 63.1 | 62.3 | 62.6 | **37.43** |
| | | | | | #DIV/0! | |
| 2002 | | | | | #DIV/0! | |
| United States | 67.8 | 67.6 | 68.0 | 68.3 | 67.9 | |
| Northeast | 63.9 | 63.9 | 64.7 | 64.9 | 64.4 | |
| Midwest | 73.1 | 72.8 | 73.2 | 73.3 | 73.1 | |
| South | 69.9 | 69.3 | 69.5 | 70.3 | 69.8 | |
| West | 62.2 | 62.4 | 62.8 | 62.6 | 62.5 | **37.50** |
| | | | | | #DIV/0! | |
| 2002\r3 | | | | | #DIV/0! | |
| United States | 67.8 | 67.6 | 68.0 | 68.3 | 67.9 | |
| Northeast | 63.8 | 63.8 | 64.6 | 64.8 | 64.3 | |
| Midwest | 73.2 | 72.8 | 73.2 | 73.3 | 73.1 | |
| South | 69.8 | 69.3 | 69.5 | 70.3 | 69.7 | |
| West | 62.1 | 62.4 | 62.7 | 62.5 | 62.4 | |
| | | | | | #DIV/0! | |
| 2003 | | | | | #DIV/0! | |
| United States | 68.0 | 68.0 | 68.4 | 68.6 | 68.3 | |
| Northeast | 64.2 | 64.2 | 64.4 | 64.7 | 64.4 | |
| Midwest | 72.9 | 72.8 | 73.5 | 73.5 | 73.2 | |
| South | 69.9 | 69.9 | 70.0 | 70.5 | 70.1 | |
| West | 62.8 | 63.2 | 63.8 | 63.8 | 63.4 | **36.60** |
| | | | | | #DIV/0! | |
| 2004 | | | | | #DIV/0! | |
| United States | 68.6 | 69.2 | 69.0 | 69.2 | 69.0 | |
| Northeast | 65.1 | 65.4 | 64.4 | 65.2 | 65.0 | |
| Midwest | 73.5 | 74.2 | 73.8 | 73.7 | 73.8 | |
| South | 70.3 | 70.9 | 71.0 | 71.5 | 70.9 | |
| West | 63.7 | 64.5 | 64.7 | 63.9 | 64.2 | **35.80** |
| | | | | | #DIV/0! | |
| 2005 | | | | | #DIV/0! | |
| United States | 69.1 | 68.6 | 68.8 | 69.0 | 68.9 | |
| Northeast | 65.4 | 64.7 | 65.1 | 65.4 | 65.2 | |
| Midwest | 73.1 | 73.4 | 73.3 | 72.8 | 73.2 | |
| South | 71.1 | 70.4 | 70.6 | 71.1 | 70.8 | |
| West | 64.9 | 63.8 | 64.2 | 64.6 | 64.4 | **35.63** |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2002 | | | | | #DIV/0! | |
| United States | 67.8 | 67.6 | 68.0 | 68.3 | 67.9 | |
| Northeast | 63.9 | 63.9 | 64.7 | 64.9 | 64.4 | |
| Midwest | 73.1 | 72.8 | 73.2 | 73.3 | 73.1 | |
| South | 69.9 | 69.3 | 69.5 | 70.3 | 69.8 | |
| West | 62.2 | 62.4 | 62.8 | 62.6 | 62.5 | **37.50** |
| 2003 | | | | | #DIV/0! | |
| United States | 68.0 | 68.0 | 68.4 | 68.6 | 68.3 | |
| Northeast | 64.2 | 64.2 | 64.4 | 64.7 | 64.4 | |
| Midwest | 72.9 | 72.8 | 73.5 | 73.5 | 73.2 | |
| South | 69.9 | 69.9 | 70.0 | 70.5 | 70.1 | |
| West | 62.8 | 63.2 | 63.8 | 63.8 | 63.4 | **36.60** |
| | | | | | #DIV/0! | |
| 2004 | | | | | #DIV/0! | |
| United States | 68.6 | 69.2 | 69.0 | 69.2 | 69.0 | |
| Northeast | 65.1 | 65.4 | 64.4 | 65.2 | 65.0 | |
| Midwest | 73.5 | 74.2 | 73.8 | 73.7 | 73.8 | |
| South | 70.3 | 70.9 | 71.0 | 71.5 | 70.9 | |
| West | 63.7 | 64.5 | 64.7 | 63.9 | 64.2 | **35.80** |
| | | | | | #DIV/0! | |
| 2005 | | | | | #DIV/0! | |
| United States | 69.1 | 68.6 | 68.8 | 69.0 | 68.9 | |
| Northeast | 65.4 | 64.7 | 65.1 | 65.4 | 65.2 | |
| Midwest | 73.1 | 73.4 | 73.3 | 72.8 | 73.2 | |
| South | 71.1 | 70.4 | 70.6 | 71.1 | 70.8 | |
| West | 64.9 | 63.8 | 64.2 | 64.6 | 64.4 | **35.63** |
| | | | | | #DIV/0! | |
| 2006 | | | | | #DIV/0! | |
| United States | 68.5 | 68.7 | 69.0 | 68.9 | 68.8 | |
| Northeast | 64.7 | 65.4 | 65.5 | 65.3 | 65.2 | |
| Midwest | 72.5 | 72.5 | 72.8 | 73.0 | 72.7 | |
| South | 70.4 | 70.4 | 70.6 | 70.8 | 70.6 | |
| West | 64.4 | 64.7 | 65.3 | 64.5 | 64.7 | **35.28** |
| | | | | | #DIV/0! | |
| 2007 | | | | | #DIV/0! | |
| United States | 68.4 | 68.2 | 68.2 | 67.8 | 68.2 | |
| Northeast | 64.8 | 65.4 | 65.2 | 64.6 | 65.0 | |
| Midwest | 72.2 | 71.8 | 71.9 | 71.7 | 71.9 | |
| South | 70.6 | 69.9 | 70.1 | 70.0 | 70.2 | |
| West | 63.6 | 64.1 | 63.5 | 62.7 | 63.5 | **36.53** |
| | | | | | #DIV/0! | |
| 2008 | | | | | #DIV/0! | |
| United States | 67.8 | 68.1 | 67.9 | 67.5 | 67.8 | |
| Northeast | 64.7 | 65.3 | 64.4 | 64.0 | 64.6 | |
| Midwest | 72.0 | 71.7 | 71.9 | 71.4 | 71.8 | |
| South | 69.7 | 70.2 | 69.9 | 69.8 | 69.9 | |
| West | 62.8 | 63.0 | 63.5 | 62.7 | 63.0 | **37.00** |
| | | | | | #DIV/0! | |
| 2009 | | | | | #DIV/0! | |
| United States | 67.3 | 67.4 | 67.6 | 67.2 | 67.4 | |
| Northeast | 63.7 | 64.3 | 64.0 | 63.9 | 64.0 | |
| Midwest | 70.7 | 70.5 | 71.6 | 71.3 | 71.0 | |
| South | 69.6 | 70.0 | 69.7 | 69.1 | 69.6 | |
| West | 62.8 | 62.5 | 62.7 | 62.3 | 62.6 | **37.43** |
| | | | | | #DIV/0! | |
| 2010 | | | | | #DIV/0! | |
| United States | 67.1 | 66.9 | 66.9 | 66.5 | 66.9 | |
| Northeast | 64.4 | 64.2 | 63.9 | 64.1 | 64.2 | |
| Midwest | 70.9 | 70.8 | 71.1 | 70.5 | 70.8 | |
| South | 69.2 | 69.1 | 69.1 | 68.5 | 69.0 | |
| West | 61.9 | 61.4 | 61.3 | 61.0 | 61.4 | **38.60** |
| | | | | | #DIV/0! | |
| 2011 | | | | | #DIV/0! | |
| United States | 66.4 | 65.9 | 66.3 | 66.0 | 66.2 | |
| Northeast | 63.9 | 63.0 | 63.7 | 63.7 | 63.6 | |
| Midwest | 70.4 | 70.0 | 70.3 | 70.0 | 70.2 | |
| South | 68.4 | 68.2 | 68.4 | 68.3 | 68.3 | |
| West | 60.9 | 60.3 | 60.7 | 60.1 | 60.5 | **39.50** |
| | | | | | #DIV/0! | |
| 2012 | | | | | #DIV/0! | |
| United States | 65.4 | 65.5 | 65.5 | | 65.5 | |
| Northeast | 62.5 | 63.7 | 63.9 | | 63.4 | |
| Midwest | 69.5 | 69.6 | 69.6 | | 69.6 | |
| South | 67.5 | 67.4 | 66.9 | | 67.3 | |
| West | 59.9 | 59.7 | 60.1 | | 59.9 | **40.10** |

## Appendix A4-4: Decennial-Census Tenure rates State of Wyoming (1900-2010)



# Historical Census of Housing Tables: Homeownership

Owning one's home has long been considered a part of the American Dream. If so, we have been much better off in recent decades than we were in the early 20th century. In 2000, about 66 percent of American households owned their own homes; at the dawn of the century, less than half could make that claim. Homeownership rates declined slowly but steadily from 1900 to 1920. There was a jump in the 1920's, largely fueled by the economy of the Roaring 20's. Then, the Great Depression drove the homeownership rate to its lowest level of the century -- 43.6 percent in 1940. The post-World War II surge was remarkable. A booming economy, favorable tax laws, a rejuvenated home building industry, and easier financing saw homeownership explode nationally, topping 60 percent in just two decades. Even so, individual States have seen ups and downs not always closely related to national trends. Look at the strange journey of North Dakota. In 1900, it had the highest homeownership rate (80 percent) ever recorded by a single State for any decennial census. Then, the rate fell, even during the 1920's. By 1940, its rate had fallen to about 50 percent. Afterward, it leaped back rapidly to well over 60 percent in a mere decade. Some of its neighbors -- South Dakota, Nebraska, and Iowa- show a similar trend. Many southern States had very low homeownership rates with little change in the early years of the 20th century, saw a tremendous boom after World War II, and now stand above the national average. Alabama, Georgia, Louisiana, Mississippi, and South Carolina are good examples of this trend. Some States have always had high homeownership rates -- over 50 percent. These are found in the Rocky Mountains, the Midwest, and northern New England. Look at Utah (the only State where the rate has never been under 60 percent), Michigan, and Maine. The Middle Atlantic States (New Jersey, New York, and Pennsylvania) illustrate well the jump from 1920 to 1930, the subsequent fall in 1940, and the post-World War II boom. By the way, New York, in 1990, had more owned than rented homes for the first time this century in a decennial census. There are other things worthy of some note. West Virginia has been the homeownership leader the past three censuses. The District of Columbia has never had a rate even approaching 50 percent in this century. California reached its high water mark in 1960 at 58.4 percent.

HOMEOWNERSHIP RATES



| | 2010 | 2000 | 1990 | 1980 | 1970 | 1960 | 1950 | 1940 | 1930 | 1920 | 1910 | 1900 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| US | 65.1% | 66.2% | 64.2% | 64.4% | 62.9% | 61.9% | 55.0% | 43.6% | 47.8% | 45.6% | 45.9% | 46.5% |
| AL | 69.7% | 72.5% | 70.5% | 70.1% | 66.7% | 59.7% | 49.4% | 33.6% | 34.2% | 35.0% | 35.1% | 34.4% |
| AK | 63.1% | 62.5% | 56.1% | 58.3% | 50.3% | 48.3% | 54.5% | NA | NA | NA | NA | NA |
| AZ | 66.0% | 68.0% | 64.2% | 68.3% | 65.3% | 63.9% | 56.4% | 47.9% | 44.8% | 42.8% | 49.2% | 57.5% |
| AR | 67.0% | 69.4% | 69.6% | 70.5% | 66.7% | 61.4% | 54.5% | 39.7% | 40.1% | 45.1% | 46.6% | 47.7% |
| CA | 55.9% | 56.9% | 55.6% | 55.9% | 54.9% | 58.4% | 54.3% | 43.4% | 46.1% | 43.7% | 49.5% | 46.3% |
| CO | 65.5% | 67.3% | 62.2% | 64.5% | 63.4% | 63.8% | 58.1% | 46.3% | 50.7% | 51.6% | 51.5% | 46.6% |
| CT | 67.5% | 66.8% | 65.6% | 63.9% | 62.5% | 61.9% | 51.1% | 40.5% | 44.5% | 37.6% | 37.3% | 39.0% |
| DE | 72.1% | 72.3% | 70.2% | 69.1% | 68.0% | 66.9% | 58.9% | 47.1% | 52.1% | 44.7% | 40.7% | 36.3% |
| DC | 42.0% | 40.8% | 38.9% | 35.5% | 28.2% | 30.0% | 32.3% | 29.9% | 38.6% | 30.3% | 25.2% | 24.0% |
| FL | 67.4% | 70.1% | 67.2% | 68.3% | 68.6% | 67.5% | 57.6% | 43.6% | 42.0% | 42.5% | 44.2% | 46.8% |
| GA | 65.7% | 67.5% | 64.9% | 65.0% | 61.1% | 56.2% | 46.5% | 30.8% | 30.6% | 30.9% | 30.5% | 30.6% |
| HI | 57.7% | 56.5% | 53.9% | 51.7% | 46.9% | 41.1% | 33.0% | NA | NA | NA | NA | NA |
| ID | 69.9% | 72.4% | 70.1% | 72.0% | 70.1% | 70.5% | 65.5% | 57.9% | 57.0% | 60.9% | 68.1% | 71.6% |
| IL | 67.5% | 67.3% | 64.2% | 62.6% | 59.4% | 57.8% | 50.1% | 40.3% | 46.5% | 43.8% | 44.1% | 45.0% |
| IN | 69.9% | 71.4% | 70.2% | 71.7% | 71.7% | 71.1% | 65.5% | 53.1% | 57.3% | 54.8% | 54.8% | 56.1% |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IA | 72.1% | 72.3% | 70.0% | 71.8% | 71.7% | 69.1% | 63.4% | 51.5% | 54.7% | 58.1% | 58.4% | 60.5% |
| KS | 67.8% | 69.2% | 67.9% | 70.2% | 69.1% | 68.9% | 63.9% | 51.0% | 56.0% | 56.9% | 59.1% | 59.1% |
| KY | 68.7% | 70.8% | 69.6% | 70.0% | 66.9% | 64.3% | 58.7% | 48.0% | 51.3% | 51.6% | 51.6% | 51.5% |
| LA | 67.2% | 67.9% | 65.9% | 65.5% | 63.1% | 59.0% | 50.3% | 36.9% | 35.0% | 33.7% | 32.2% | 31.4% |
| ME | 71.3% | 71.6% | 70.5% | 70.9% | 70.1% | 66.5% | 62.8% | 57.3% | 61.7% | 59.6% | 62.5% | 64.8% |
| MD | 67.5% | 67.7% | 65.0% | 62.0% | 58.8% | 64.5% | 56.3% | 47.4% | 55.2% | 49.9% | 44.0% | 40.0% |
| MA | 62.3% | 61.7% | 59.3% | 57.5% | 57.5% | 55.9% | 47.9% | 38.1% | 43.5% | 34.8% | 33.1% | 35.0% |
| MI | 72.1% | 73.8% | 71.0% | 72.7% | 74.4% | 74.4% | 67.5% | 55.4% | 59.0% | 58.9% | 61.7% | 62.3% |
| MN | 73.0% | 74.6% | 71.8% | 71.7% | 71.5% | 72.1% | 66.4% | 55.2% | 58.9% | 60.7% | 61.9% | 63.5% |
| MS | 69.6% | 72.3% | 71.5% | 71.0% | 66.3% | 57.7% | 47.8% | 33.3% | 32.5% | 34.0% | 34.0% | 34.5% |
| MO | 68.8% | 70.3% | 68.8% | 69.6% | 67.2% | 64.3% | 57.7% | 44.3% | 49.9% | 49.5% | 51.1% | 50.9% |
| MT | 68.0% | 69.1% | 67.3% | 68.6% | 65.7% | 64.0% | 60.3% | 52.0% | 54.5% | 60.5% | 60.0% | 56.6% |
| NE | 67.2% | 67.4% | 66.5% | 68.4% | 66.4% | 64.8% | 60.6% | 47.1% | 54.3% | 57.4% | 59.1% | 56.8% |
| NV | 58.8% | 60.9% | 54.8% | 59.6% | 58.5% | 56.3% | 48.7% | 46.1% | 47.1% | 47.6% | 53.4% | 66.2% |
| NH | 71.0% | 69.7% | 68.2% | 67.6% | 68.2% | 65.1% | 58.1% | 51.7% | 55.0% | 49.8% | 51.2% | 53.9% |
| NJ | 65.4% | 65.6% | 64.9% | 62.0% | 60.9% | 61.3% | 53.1% | 39.4% | 48.4% | 38.3% | 35.0% | 34.3% |
| NM | 68.5% | 70.0% | 67.4% | 68.1% | 66.4% | 65.3% | 58.8% | 57.3% | 57.4% | 59.4% | 70.6% | 68.5% |
| NY | 53.3% | 53.0% | 52.2% | 48.6% | 47.3% | 44.8% | 37.9% | 30.3% | 37.1% | 30.7% | 31.0% | 33.2% |
| NC | 66.7% | 69.4% | 68.0% | 68.4% | 65.4% | 60.1% | 53.3% | 42.4% | 44.5% | 47.4% | 47.3% | 46.6% |
| ND | 65.4% | 66.6% | 65.6% | 68.7% | 68.4% | 68.4% | 66.2% | 49.8% | 58.6% | 65.3% | 75.7% | 80.0% |
| OH | 67.6% | 69.1% | 67.5% | 68.4% | 67.7% | 67.4% | 61.1% | 50.0% | 54.4% | 51.6% | 51.3% | 52.5% |
| OK | 67.2% | 68.4% | 68.1% | 70.7% | 69.2% | 67.0% | 60.0% | 42.8% | 41.3% | 45.5% | 45.4% | 54.2% |
| OR | 62.2% | 64.3% | 63.1% | 65.1% | 66.1% | 69.3% | 65.3% | 55.4% | 59.1% | 54.8% | 60.1% | 58.7% |
| PA | 69.6% | 71.3% | 70.6% | 69.9% | 68.8% | 68.3% | 59.7% | 45.9% | 54.4% | 45.2% | 41.6% | 41.2% |
| RI | 60.7% | 60.0% | 59.5% | 58.8% | 57.9% | 54.5% | 45.3% | 37.4% | 41.2% | 31.1% | 28.3% | 28.6% |
| SC | 69.3% | 72.2% | 69.8% | 70.2% | 66.1% | 57.3% | 45.1% | 30.6% | 30.9% | 32.2% | 30.8% | 30.6% |
| SD | 68.1% | 68.2% | 66.1% | 69.3% | 69.6% | 67.2% | 62.2% | 45.0% | 53.1% | 61.5% | 68.2% | 71.2% |
| TN | 68.2% | 69.9% | 68.0% | 68.6% | 66.7% | 63.7% | 56.5% | 44.1% | 46.2% | 47.7% | 47.0% | 46.3% |
| TX | 63.7% | 63.8% | 60.9% | 64.3% | 64.7% | 64.8% | 56.7% | 42.8% | 41.7% | 42.8% | 45.1% | 46.5% |
| UT | 70.4% | 71.5% | 68.1% | 70.7% | 69.3% | 71.7% | 65.3% | 61.1% | 60.9% | 60.0% | 64.8% | 67.8% |
| VT | 70.7% | 70.6% | 69.0% | 68.7% | 69.1% | 66.0% | 61.3% | 55.9% | 59.8% | 57.5% | 58.5% | 60.4% |
| VA | 67.2% | 68.1% | 66.3% | 65.6% | 62.0% | 61.3% | 55.1% | 48.9% | 52.4% | 51.1% | 51.5% | 48.8% |
| WA | 63.9% | 64.6% | 62.6% | 65.6% | 66.8% | 68.5% | 65.0% | 57.0% | 59.4% | 54.7% | 57.3% | 54.5% |
| WV | 73.4% | 75.2% | 74.1% | 73.6% | 68.9% | 64.3% | 55.0% | 43.7% | 45.9% | 46.8% | 49.5% | 54.6% |
| WI | 68.1% | 68.4% | 66.7% | 68.2% | 69.1% | 68.6% | 63.5% | 54.4% | 63.2% | 63.6% | 64.6% | 66.4% |
| WY | 69.2% | 70.0% | 67.8% | 69.2% | 66.4% | 62.2% | 54.0% | 48.6% | 48.3% | 51.9% | 54.5% | 55.2% |

Alaska and Hawaii are NOT included in 1950 US total;
the rate does not change if they are included.

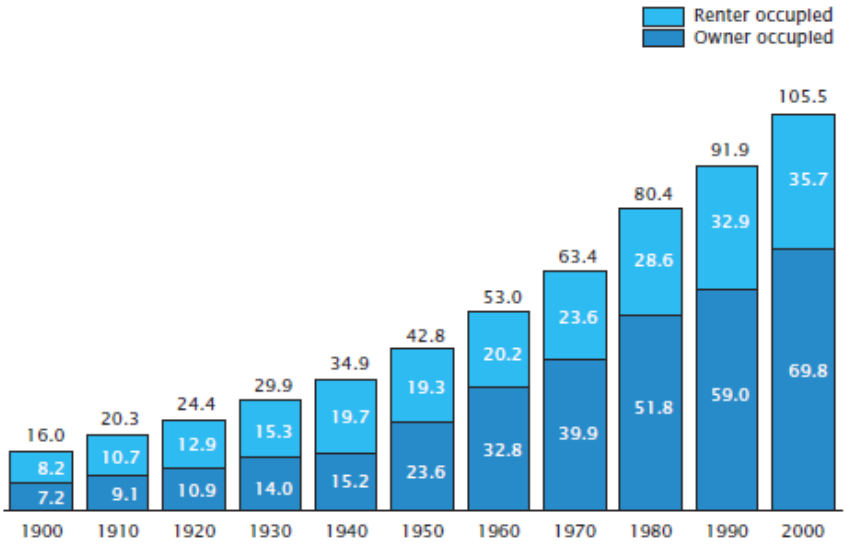


Data for 1900-1930 are limited to households reporting tenure.
The rates for 1900 will not exactly match those given in some
earlier reports and briefs; the above 1900 rates include some
families living in institutions, boarding rooms, and other such
living quarters that have not been counted as households
from 1930 to the present. Some earlier reports excluded these
quasi-households from the rates. But, these types of households
are included in 1910 and 1920, so 1900 was made consistent
with the other early censuses. If these quasi-households are
excluded, the homeownership in 1900 for the U.S. was 46.7%.
Source: U.S. Census Bureau

Last Modified: March 01, 2013

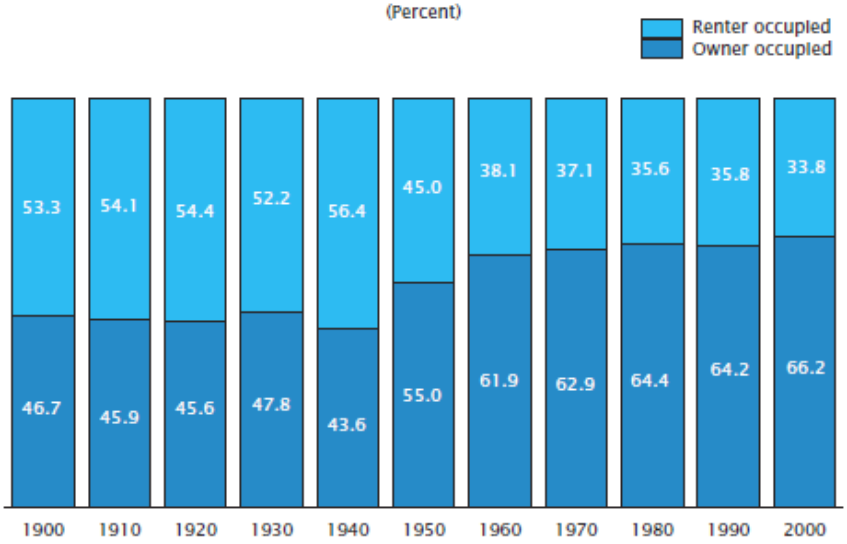
## Appendix A4-5: Decennial-Census-Bureau Tenure rates (1900-2010)

Figure 4-5.
**Occupied Housing Units by Tenure: 1900 to 2000**
(Millions)




Note: Totals for 1900 to 1930 include occupied housing units with tenure unknown.
Source: U.S. Census Bureau, decennial census of population, 1900 to 1930, and decennial census of housing, 1940 to 2000.

Figure 4-6.
**Distribution of Occupied Housing Units by Tenure: 1900 to 2000**
(Percent)




Note: Percents for 1900 to 1930 are based on occupied housing units with tenure reported.
Source: U.S. Census Bureau, decennial census of population, 1900 to 1930, and decennial census of housing, 1940 to 2000.

## Appendix A4-6: ESRI BAO Tapestry Segmentation Profiles of Seattle King Central Area

BAO does provide a profiling report that is uniquely appealing. It takes demographic data and determines which of the 66 profiles are most prevalent in the area. The profiles of the subject areas are defined with a combination of narrative and detailed data. BAO's source of data is a combination of Census, American Communities Survey, Bureau of Labor Statistics,,, etc. Full description of ESRI BAO's sources can be found on their website or available upon request.

The SKCA top 5 populations are comprised of the following profile types and respective percentage of the population.

**SKCA**

| | | |
|---|---|---|
| 1. | 27. Metro Renters | 51.1% |
| 2. | 23. Trendsetters | 12.9% |
| 3. | 08. Laptops and Lattes | 9.8% |
| 4. | 09. Urban Chic | 8.2% |
| 5. | 65. Social Security Set | 7.1% |

The SMSA (Tri-county) top 5 populations are comprised of the following profile types and respective percentage of the population.

**SMSA**

| | | |
|---|---|---|
| 1. | 06. Sophisticated Squires | 6.9% |
| 2. | 24. Main Street, USA | 6.7% |
| 3. | 27. Metro Renters | 6.4% |
| 4. | 09. Urban Chic | 5.9% |
| 5. | 12. Up and Coming Families | 5.7% |

### Metro Renters

#### Demographic

Young, educated singles, residents of *Metro Renters* neighborhoods are just beginning their professional careers in some of the largest US cities such as New York, Chicago, and Los Angeles. Residents will sometimes share housing with a roommate to help defray the cost of their high rent. Households are either single person or shared. The median age of 33.6 years is younger than the US median of 37 years. Approximately 30 percent are in their 20s; 14 percent are in their early 30s. This younger population is also more diverse than the US population; 11.5 percent of the residents are Asian.

#### Socioeconomic

The median household income is $56,311 and rising. Approximately 60 percent of employed residents work in professional and management occupations, most in the service industry sector. One of Tapestry Segmentation's most educated markets, more than one in four *Metro Renters* residents aged 25 years or older holds a graduate degree; one in three has earned a bachelor's degree. More than 80 percent of these residents have attended college; 17 percent are still enrolled in undergraduate or graduate school. Although their median net worth of $22,097 seems low, 78 percent of these residents are renting and don't own a home, often considered a primary household asset.

#### Residential

*Metro Renters* neighborhoods are found in the largest metropolitan centers across the United States, with the highest concentrations in California, New York, and Illinois. Approximately 90 percent of the housing is apartments; 37 percent in high-rise buildings. Median home value in these neighborhoods is $270,583.

#### Preferences

Because they rent, "home and hearth" products are low priority, although they will buy new furniture from stores such as Crate & Barrel or Pier One Imports. Most of them have renter's insurance. They buy clothes and other merchandise from traditional stores or online from favorites such as Banana Republic, Gap, Nordstrom, amazon.com, and barnesandnoble.com. They take their clothes to dry cleaners.

Active *Metro Renters* residents work out regularly at clubs, play tennis and volleyball, practice yoga, ski, and jog. They take advantage of their urban milieu; they go dancing, visit museums, attend classical or rock concerts, go to karaoke nights and

the movies, and eat out. Painting and drawing are favorite hobbies. Residents enjoy traveling domestically and overseas and drinking domestic and imported beer and wine. They read two or more daily newspapers; history books; and airline, fashion, epicurean, travel, and business/finance magazines. They listen to alternative, jazz, classical music, all-news, and public radio. They seldom watch TV; most households own only one set so they can watch movies and news programs. They rent foreign and classic films on DVD.

They go online frequently to look for jobs, make travel arrangements, download music, research real estate, watch videos, and shop. Many buy their PCs online; they prefer laptops, although many also own PDAs. Politically, these neighborhoods are liberal.

## Trendsetters

### Demographic

On the cutting edge of urban style, *Trendsetters* residents are young, diverse, and mobile. More than half the households are singles who live alone or share the rent with a roommate. Families comprise the remainder. With a median age of 35.5 years, this segment is slightly younger than the US median. Ethnically diverse, 13.7 percent of the residents are Asian and 23 percent are Hispanic; both percentages are well above those of the United States.

### Socioeconomic

These residents are educated professionals who work in substantive jobs. Eighteen percent of the residents who are aged 25 years and older hold a graduate degree, 46 percent have earned a bachelor's degree, and 70 percent have attended college. The median household income is $61,498; the median net worth is $35,210. Wages account for most of the earned income; however, other sources include interest, dividends, rental properties, and self-employment business ventures.

### Residential

Seventy-five percent of these neighborhoods are located on the West Coast; the other 25 percent are in the Northeast. Not ready for homeowner responsibilities, sixty-eight percent rent apartments in upscale, multiunit settlements in older urban districts. The average gross rent is one-third higher than the US average. Single-family homes and townhouses comprise the remainder of the housing types. Most of the housing was built before 1960. The median home value is $414,842. Because public transportation is so readily available, 18 percent of the households don't own a vehicle.

### Preferences

*Trendsetters* residents are spenders; they shop in stores, online, and by phone. Fashion-conscious residents buy essentials at discount warehouse stores and branded clothing from stores such as Banana Republic, Gap, Nordstrom, and Macy's. To stay current on trends, they read fashion and epicurean magazines. They listen to classical, alternative music, public, and all-news radio. They are politically liberal.

To keep in touch, *Trendsetters* residents are never far from their electronic gadgets and computers. They own the latest and greatest laptop computers, PDAs, and iPods. They go online frequently to shop, make travel reservations, research real estate or investment information, and watch videos. Many young residents are beginning to invest, especially in bonds or CDs.

Health-conscious residents buy natural/organic foods, take vitamins, and exercise regularly. They go downhill skiing and practice yoga. They also travel, go to the movies, attend rock concerts, and read—especially nonfiction and biographies. When they watch TV, they prefer movie channels or MTV.

## Laptops and Lattes

### Demographic

With no home ownership or child-rearing responsibilities, residents of *Laptops and Lattes* neighborhoods enjoy single life in the big city. Most households are singles who live alone or with a roommate. The average household size remains constant at 1.8. Although this segment is slowly increasing, it is maturing and diversifying more quickly. The median age is 38.7 years. Although most of the population is white, Asians represent 10.4 percent of the total population.

### Socioeconomic

This segment is affluent; the median household income of $93,899 supports these residents. The median net worth is $285,718. *Laptops and Lattes* residents are highly educated. More than 70 percent of residents aged 25 years and older hold a bachelor's or graduate degree; approximately 90 percent have attended college. The percentage enrolled in college or graduate school is more than three times the national level. Two-thirds of the employed residents work in professional or management positions, especially in the scientific, technical, finance, insurance, educational services, health care, and information industry sectors. More than half receive investment income; 19 percent earn self-employment income.

### Residential

*Laptops and Lattes* residents prefer to live in major metropolitan areas such as New York City, Los Angeles, San Francisco, Boston, and Chicago. They are more likely to rent than own their homes; home ownership is at 39 percent. The majority of housing is apartments in multiunit buildings, especially those with 20 or more units. These neighborhoods are older and

virtually untouched by urban renewal. Although 38 percent of the housing units were built before 1940, they are not inexpensive. The average gross rent is 85 percent higher than the US level, third highest of the Tapestry segments. The median home value is $634,295, second only to *Top Rung.* Thirty percent do not own a vehicle.

### Preferences

Cosmopolitan, connected, and politically liberal, *Laptops and Lattes* residents rely on their web-enabled cell phones instead of laptops to communicate. After the college segments, this is the top market to own an iPod and laptop or notebook computer. They go online to check e-mail, trade and track investments, review the latest news, arrange travel, and shop on sites such as amazon.com, ebay.com, and barnesandnoble.com. They also order items by phone. These residents travel, especially abroad, and enjoy a variety of vacations, such as backpacking, hiking, and beach trips. They stay at upscale hotels and rent cars when on vacation. A typical resident owns renter's insurance policies and uses dry cleaning services frequently.

*Laptops and Lattes* residents go to the movies, the theater, dance performances, rock concerts, museums, bars, nightclubs, baseball and football games, and professional basketball games. They watch foreign films or movie classics on DVD and news and music channels on cable TV. *Saturday Night Live* is a favorite program. They eat out frequently and take adult education classes. They shop at Target for essentials and luxuries at high-end department and home stores.

Residents exercise regularly at a health club and practice yoga, go downhill skiing, play tennis, jog, and bike. When they listen to the radio, they have a strong preference for classical music and all-news programs. They also listen to public radio and contribute to PBS. They read two or more daily newspapers; a variety of books such as history, biographies, and self-help; and travel, epicurean, airline, fashion, finance, and business magazines. They tend to buy organic and low fat/high fiber food. They eat nutrition/energy bars and take vitamins regularly. They get involved in community activities, write to elected officials, write articles that are published, and participate in environmental groups.

## Urban Chic

### Demographic

*Urban Chic* residents are professionals who live a sophisticated, exclusive lifestyle. More than half of these households are married-couple families, similar to the US proportion. Fewer than half of them have children. Unlike the United States, there is a smaller proportion of single parents and a higher proportion of singles and shared households. The median age of 42.7 years is older than the US median of 37 years, while the diversity index of 51 is lower than the US figure of 61.

### Socioeconomic

A median household income of $87,202 and a median net worth of $314,496 enable residents of *Urban Chic* neighborhoods to live in style. They are well-educated; more than half of residents aged 25 years and older hold a bachelor's or graduate degree; 80 percent have attended college. They work in a variety of occupations, especially professional, management, and sales positions in the scientific and technical services, educational services, and health care industry sectors. Twenty percent of these households earn income from self-employment ventures; 55 percent receive additional income from investments.

### Residential

Major concentrations of *Urban Chic* neighborhoods are found in urban areas on the northern and southern California coasts and along the east coast. These neighborhoods parallel the United States for housing type and home ownership. Homes range in age from pre-World War II to post-2000, and types from high-rises to single-family houses. Sixty-three percent of the housing is single-family; 27 percent is apartments in multiunit buildings. The rate of home ownership is 66 percent. The median home value is $536,367, more than three times the US median.

### Preferences

*Urban Chic* residents focus more on their lifestyle than ambience. They travel extensively, visit museums, attend dance performances, shop at upscale stores, and do volunteer work. To stay fit, they downhill ski; go backpacking, hiking, and biking; practice yoga; do aerobics; play tennis; and lift weights. They buy natural or organic food and take a multitude of vitamins and dietary supplements. They drink imported wine and truly appreciate a good cup of coffee.

These busy, tech-savvy residents use PCs extensively. This is a top segment to own an Apple computer. They go online to arrange travel; get the latest news; check their investment portfolios; trade stocks; and buy books, clothes, flowers, and tickets to concerts and sports events. They use credit cards, often charging more than $700 a month. They also own shares in stocks, tax-exempt funds, mutual funds, and money market funds. They will occasionally use a financial planner or brokerage firm.

*Urban Chic* is one of Tapestry Segmentation's top segments for radio listening; these residents tune in to classical music, all-talk, and public radio. They are also avid readers of newspapers; books; and general editorial, news and entertainment, business, and home service magazines. They seldom watch TV; however, their favorite channels broadcast news programs and documentaries.

## Social Security Set

### Demographic

Four in ten householders are aged 65 years or older; the median age is 46.4 years. Most of them live alone. Somewhat ethnically diverse, *Social Security Set* neighborhoods are a blend of different racial groups; however, half of the residents are white and one-third are black and 18 percent are Hispanic.

### Socioeconomic

Although *Social Security Set* residents live on very low fixed incomes, they have accumulated some wealth they can tap into now that they're retired. Their median household income is $16,805; their median net worth is $10,814. Unemployment is high among the younger residents who are still part of the labor force. Eight percent of households rely on public assistance; 16 percent receive Supplemental Security Income. The service industry provides more than half of the jobs held by these employed residents. Overall, more than two-thirds of the residents graduated from high school. Thirty-seven percent attended college; 16 percent hold a bachelor's or graduate degree.

### Residential

Located in large US cities, these communities are dispersed among business districts and around city parks. Most *Social Security Set* residents rent apartments in low-rent, high-rise buildings; a few elderly residents opt to live in congregate housing. Owner-occupied houses in these neighborhoods have a median value of $111,801. Because more than half of these households do not own a vehicle, many residents rely on easily accessible public transportation.

### Preferences

Limited resources somewhat restrict the activities and purchases of residents in *Social Security Set* neighborhoods. They shop at discount stores but prefer grocery stores close to home. Many depend on Medicare or Medicaid to pay their health care costs. They bank in person and pay cash when they shop. Many purchase renter's insurance. Most households subscribe to cable television; residents enjoy their daytime and prime time TV. They watch game shows, a variety of sports, and entertainment news shows. This high viewership provides an easy way to reach these residents. Avid newspaper readers, many will read two or more to stay current on sports and the news.

## Sophisticated Squires

### Demographic

Residents of *Sophisticated Squires* neighborhoods enjoy cultured country life on the urban fringe. These city escapees accept longer commutes to live near fewer neighbors. Mostly married couple families; more than 40 percent of the households are married couples with children that range from toddlers to young adults. The median age is 38.4 years. Most are Baby-Boomers and are aged between 35 and 54 years. This segment is not ethnically diverse; most residents are white.

### Socioeconomic

These residents are educated; more than one-third of the population aged 25 years or older holds a bachelor's or graduate degree; another third has attended college. Labor force participation rates are high; occupations range from management to unskilled labor positions. Most work in white-collar jobs. The median household income is $85,144. Nearly 90 percent of the households earn wage or salary income; nearly half supplement their wages and salaries with interest, dividends, or rental income. The median net worth is $287,727.

### Residential

*Sophisticated Squires* live in less densely populated areas concentrated along the Atlantic coast and around the Great Lakes. Approximately 90 percent of the housing is single-family homes; the median home value is $230,333. Seventy-four percent of the housing was built before 1990; 55 percent was built between 1970 and 1989. More than 80 percent of the households own at least two vehicles. They prefer compact SUVs; however, many drive minivans or full-size SUVs.

### Preferences

Do-it-yourselfers, *Sophisticated Squires* residents take care of their lawns and landscaping; home improvements; and remodeling projects such as bathroom remodeling, installing new light fixtures, painting home interiors, staining decks, and cleaning carpets with their steam cleaners. They like to barbecue on their gas grills and make bread with their bread-making machines. Many households own a motorcycle. A typical household will own three or more cell phones. Looking toward the future, many residents own stocks, bonds, and large life insurance policies. When dieting, they go on Weight Watchers; many own a treadmill or stationary bike to stay fit.

They go power boating, play board and word games, do woodworking projects, and attend football and baseball games. Adults also take photos, play golf, and ride their motorcycles. Children play games on the home personal computer and typically own a video game system. Residents listen to soft adult contemporary music; classic hits; news; all-talk; and sports radio, including broadcasts of professional games. Although many households have four or more TVs, residents watch as much television as typical US households. Favorite programs include news, comedies, dramas, and programs on Home & Garden Television.

## Main Street, USA

### Demographic

*Main Street, USA* neighborhoods are a mix of household types, similar to the US distribution. Approximately half of the households are composed of married-couple families, nearly one-third are single-person or shared households, and the rest are single-parent or other family households. The median age of 36.8 years nearly matches the US median. These residents are less diverse than the US population.

### Socioeconomic

The median household income is $57,196, derived from wages, interest, dividends, or rental property. Their median net worth is $84,763. More than one in five residents aged 25 years and older hold a bachelor's or graduate degree; half of the residents have attended college. Occupation and industry distributions are similar to those of the United States.

### Residential

A mix of single-family homes and multiunit buildings, these neighborhoods are located in the suburbs of smaller cities in the Northeast, West, and Midwest. Nearly two-thirds of the housing was built before 1970. The home ownership rate is 63; the median home value is $174,970.

### Preferences

Family-oriented and frugal, these residents may occasionally go to the movies or eat out at a family restaurant, such as Friendly's or Red Robin, but are most likely to stay home and watch a rental movie or play games with their children. They own pet cats. They play baseball and basketball and go swimming. They listen to classic hits and rock radio and watch cartoons and courtroom shows on TV. They go to the beach and theme parks or take domestic vacations to visit with family or see national parks.

They go online periodically to look for jobs, research real estate, and play games and are beginning to shop online. Those who do not have Internet access at home will go online at school or the public library. They use the Yellow Pages to find veterinarians or stores. They will invest in small home improvement and remodeling projects, usually doing the work themselves instead of hiring a contractor. They buy the tools and supplies for these projects from Home Depot or Ace Hardware. They keep up their lawns and gardens by planting bulbs, fertilizing, and applying lawn care products regularly.

## Up and Coming Families

### Demographic

With an annual household growth rate of 4.56 percent, *Up and Coming Families* represents Tapestry Segmentation's second highest household growth market. A mix of Generation Xers and Baby-Boomers with a median age of 31.9 years, this segment is the youngest of Tapestry Segmentation's affluent family markets. Residents of these neighborhoods are young, affluent families with younger children. Eighty percent of the households are families. Most of the residents are white; however, diversity is increasing as the segment grows.

### Socioeconomic

Beginning their careers, residents of *Up and Coming Families* are earning above-average incomes. The median household income is $76,135, higher than the national median. The median net worth is $175,142. Nearly two-thirds of the residents aged 25 years and older have attended college; more than one in five holds a bachelor's degree. Labor force participation is well above average at 71 percent; unemployment is low. Ninety-one percent of households earn income from wages and salaries. Although half of the households have children, they also have working parents.

### Residential

In the suburban outskirts of midsized metropolitan areas with populations higher than 250,000, approximately half of *Up and Coming Families* neighborhoods are concentrated in the South, the other half in the West and Midwest. Most residents live in new single-family housing; more than half the housing units were built in the last 10 years. Home ownership is at 83 percent. The median home value is $175,637.

### Preferences

Family and home dictate the products these residents buy. Many are beginning or expanding their families, so baby equipment, children's clothing, and toys are essential purchases. Because many are first-time homeowners, basic household furniture and lawn fertilizer, weed control, and insecticide products are important. Car loans and mortgage payments are major household budget items. They are most likely to own or lease an SUV or a minivan. They eat out at family restaurants, especially on the weekends, and buy fast food at the drive-through or for takeout.

They play softball, take the kids to the zoo, and visit theme parks (generally Sea World or Disney World) where they make good use of their digital camera or camcorder. They rent comedy, family, and action/adventure DVDs. Cable station favorites include Country Music Channel, ESPN news, The Learning Channel, and the Disney Channel. They listen to country, soft rock, and contemporary hit radio.

## Historic SMSA NAM

| | 1990 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) Population (K) | 2,579 | 2,979 | 3,020 | 3,052 | 3,093 | 3,118 | 3,133 | 3,159 | 3,198 | 3,257 | 3,304 | 3,355 | 3,415 | 3,448 | 3,480 | 3,523 |
| 2) Pop.Growth(K) | | 49.99 | 40.89 | 32.54 | 40.74 | 25.37 | 14.72 | 25.95 | 39.30 | 58.82 | 47.39 | 50.57 | 59.76 | 33.09 | 32.46 | 43.01 |
| 3) Average House Hold Size | 2.554 | 2.543 | 2.543 | 2.544 | 2.543 | 2.542 | 2.541 | 2.539 | 2.537 | 2.535 | 2.533 | 2.534 | 2.536 | 2.534 | 2.533 | 2.532 |
| 4)Total HH (K) | 1,002 | 1,171 | 1,188 | 1,197 | 1,216 | 1,227 | 1,233 | 1,244 | 1,261 | 1,285 | 1,305 | 1,324 | 1,347 | 1,357 | 1,374 | 1,391 |
| 5) HH Growth (K) | | 21.16 | 16.08 | 9.06 | 19.76 | 10.46 | 6.28 | 11.19 | 16.47 | 24.20 | 19.72 | 19.17 | 22.76 | 10.90 | 16.29 | 17.63 |
| 6) Renter Tenure HH (RTHH) Rate | 39.61% | 39.23% | 38.74% | 37.87% | 37.07% | 37.16% | 36.30% | 35.35% | 35.37% | 35.04% | 36.32% | 36.81% | 37.26% | 38.45% | 39.45% | 40.05% |
| 7) RTHH (K) | 396.9 | 459.6 | 460.0 | 453.2 | 450.9 | 455.9 | 447.6 | 439.8 | 445.9 | 450.2 | 473.8 | 487.3 | 501.7 | 521.9 | 542.0 | 557.3 |
| 8) RTHH Growth (K) | 7.83 | 7.829 | 0.490 | (6.890) | (2.259) | 4.982 | (8.272) | (7.758) | 6.075 | 4.318 | 23.611 | 13.448 | 14.439 | 20.183 | 20.047 | 15.289 |
| 9) RTHHG Volatility | | -0.05% | -0.49% | -0.87% | -0.80% | 0.09% | -0.86% | -0.95% | 0.02% | -0.33% | 1.28% | 0.49% | 0.45% | 1.19% | 1.00% | 0.60% |
| 10) SMSA Net Absorption | | 44 | 1,137 | 7,070 | 1,099 | (89) | 208 | 447 | 3,467 | (2,686) | (2,274) | (143) | (1,872) | 11,430 | 1,529 | 5,199 |
| 11) SKCA Net Absorption | | (214) | 114 | 193 | 399 | 1,236 | 432 | 527 | 631 | (420) | (118) | 444 | 186 | 2,216 | 252 | 1,327 |

## Apartment Capture Ratio CCR

| | 1990 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7) Total Renter HH (K) | 396.92 | 459.55 | 460.04 | 453.15 | 450.89 | 455.87 | 447.60 | 439.84 | 445.92 | 450.24 | 473.85 | 487.30 | 501.74 | 521.92 | 541.97 |
| s2) Occupied Units | 170.24 | 187.88 | 189.02 | 196.09 | 197.19 | 197.10 | 197.31 | 197.75 | 201.22 | 198.53 | 196.26 | 196.12 | 194.25 | 205.68 | 207.20 |
| ss2) Occupied Units | | 21,904 | 22,018 | 22,211 | 22,610 | 23,846 | 24,278 | 24,805 | 25,436 | 25,016 | 24,898 | 25,342 | 25,528 | 27,744 | 27,996 |
| 8) Annual Renter HH | | 7,829 | 490 | (6,890) | (2,259) | 4,982 | (8,272) | (7,758) | 6,075 | 4,318 | 23,611 | 13,448 | 14,439 | 20,183 | 20,047 |
| SMSA NAM | | 44 | 1,137 | 7,070 | 1,099 | (89) | 208 | 447 | 3,467 | (2,686) | (2,274) | (143) | (1,872) | 11,430 | 1,529 |
| SKC NAM | | (214) | 114 | 193 | 399 | 1,236 | 432 | 527 | 631 | (420) | (118) | 444 | 186 | 2,216 | 252 |
| | | 11.7% | 11.6% | 11.3% | 11.5% | 12.1% | 12.3% | 12.5% | 12.6% | 12.6% | 12.7% | 12.9% | 13.1% | 13.49% | 13.51% |
| a13) Annual Emp. Growth | | 65.26 | 36.68 | 34.95 | -17.92 | -47.79 | -8.68 | 18.99 | 44.12 | 52.14 | 54.07 | 17.51 | -89.90 | -28.07 | 29.49 |
| 10) SMSA Net Absorption | | 44 | 1,137 | 7,070 | 1,099 | (89) | 208 | 447 | 3,467 | (2,686) | (2,274) | (143) | (1,872) | 11,430 | 1,529 |
| 11) SKC Net Absorption | | (214) | 114 | 193 | 399 | 1,236 | 432 | 527 | 631 | (420) | (118) | 444 | 186 | 2,216 | 252 |

## Apartment Capture Ratio CCR

| | 1990 | 1998 | 2007 | 2008 | 2009 | 2010 | 2011 | 1990-2011 | 1998-2011 | Demo Rate | Inferred Rate | Market Correl | NAM Correl |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7) Total Renter HH (K) | 396.92 | 459.55 | 473.85 | 487.30 | 501.74 | 521.92 | 541.97 | 145.05 | 82.413 | | | | |
| s2) Occupied Units | 170.24 | 187.88 | 196.26 | 196.12 | 194.25 | 205.68 | 207.20 | 36.962 | 19.323 | **25.48%** | | 23.45% | |
| ss2) Occupied Units | | 21,904 | 24,898 | 25,342 | 25,528 | 27,744 | 27,996 | | 6,092 | **7.39%** | **31.5%** | | |
| 8) Annual Renter HH | | 7,829 | 23,611 | 13,448 | 14,439 | 20,183 | 20,047 | 90,242 | 62.22% | | | | |
| SMSA NAM | | 44 | (2,274) | (143) | (1,872) | 11,430 | 1,529 | 19,367 | 21.46% | 13.35% | | 0.014 | |
| SKC NAM | | (214) | (118) | 444 | 186 | 2,216 | 252 | 5,878 | 6.51% | 6.08% | 30.35% | 0.158 | 0.709 |
| | | 11.7% | 12.7% | 12.9% | 13.1% | 13.49% | 13.51% | | | | | | |
| a13) Annual Emp. Growth | | 65.26 | 54.07 | 17.51 | -89.90 | -28.07 | 29.49 | 160.84 | 5.25% | **12.01%** | | | |
| 10) SMSA Net Absorption | | 44 | (2,274) | (143) | (1,872) | 11,430 | 1,529 | 19,367 | **12.04%** | 12.04% | | (0.073) | |
| 11) SKC Net Absorption | | (214) | (118) | 444 | 186 | 2,216 | 252 | 5,878 | **3.65%** | **2.39%** | **30.35%** | (0.515) | 0.709 |

## Seattle KC (SKC) NAM

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ss1) Total Apt Units | 22,548 | 22,852 | 23,171 | 24,811 | 25,933 | 25,944 | 26,408 | 26,183 | 25,430 | 25,768 | 26,418 | 27,590 | 29,004 | 29,087 |
| ss2) Occupied | 21,904 | 22,018 | 22,211 | 22,610 | 23,846 | 24,278 | 24,805 | 25,436 | 25,016 | 24,898 | 25,342 | 25,528 | 27,744 | 27,996 |
| ss3) Vacancy Rate | 2.86% | 3.65% | 4.14% | 8.87% | 8.05% | 6.42% | 6.07% | 2.85% | 1.63% | 3.38% | 4.07% | 7.47% | 4.34% | 3.75% |
| ss8) ARR (Demo) | 4.77% | 4.79% | 4.90% | 5.01% | 5.23% | 5.42% | 5.64% | 5.70% | 5.56% | 5.25% | 5.20% | 5.09% | 5.32% | 5.17% |
| ss9) ARR Volatility (Demo) | -2.73% | 23.29% | -2.80% | -17.66% | 24.81% | -5.22% | -6.79% | 10.39% | -9.73% | -0.50% | 3.30% | 1.29% | 10.98% | 1.26% |
| ss10) SKC ACR of SMSA | 11.66% | 11.65% | 11.33% | 11.47% | 12.10% | 12.30% | 12.54% | 12.64% | 12.60% | 12.69% | 12.92% | 13.14% | 13.49% | 13.51% |
| 11) SKC Net Absorption | (214) | 114 | 193 | 399 | 1,236 | 432 | 527 | 631 | (420) | (118) | 444 | 186 | 2,216 | 252 |

| | 1998 | 1999 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| ss1) Total Apt Units | 22,548 | 22,852 | 26,418 | 27,590 | 29,004 | 29,087 | 30,871 |
| ss2) Occupied | 21,904 | 22,018 | 25,342 | 25,528 | 27,744 | 27,996 | 30,748 |
| ss3) Vacancy Rate | 2.86% | 3.65% | 4.07% | 7.47% | 4.34% | 3.75% | 2.86% |
| ss8) ARR (Demo) | 4.77% | 4.79% | 5.20% | 5.09% | 5.32% | 5.17% | 5.52% |
| ss9) ARR Volatility (Demo) | -2.73% | 23.29% | 3.30% | 1.29% | 10.98% | 1.26% | 18.00% |
| ss10) SKC ACR of SMSA | 11.66% | 11.65% | 12.92% | 13.14% | 13.49% | 13.51% | 14.36% |
| 11) SKC Net Absorption | (214) | 114 | 444 | 186 | 2,216 | 252 | 2,752 |

## Appendix A7-1: 1980 SMSA Apartment Boom and Microsoft Case study

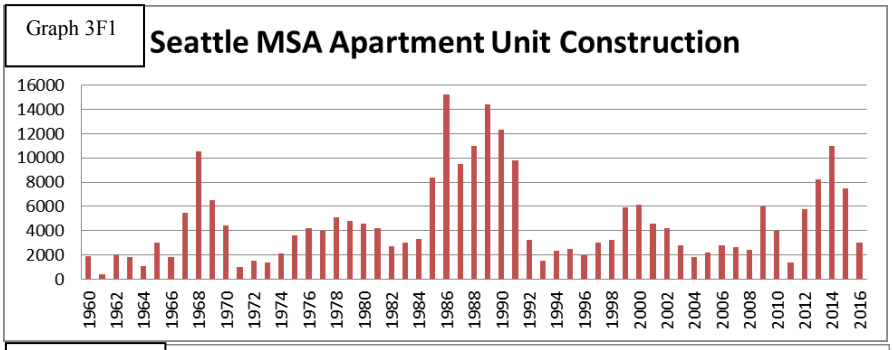
The purpose of this section is to assess a possible case study of apartment bubble during the 1980's resulting from the Microsoft boom.

**Graph 3F1** depicts the history and forecast of the apartment construction. This illustrates two points. The first, that the forecast apartment boom will be the second biggest apartment boom on record. The second is that the apartment boom of the 80's was clearly bigger. The 80's apartment boom could offer some insights to the current boom's volumes, limitations or case study.

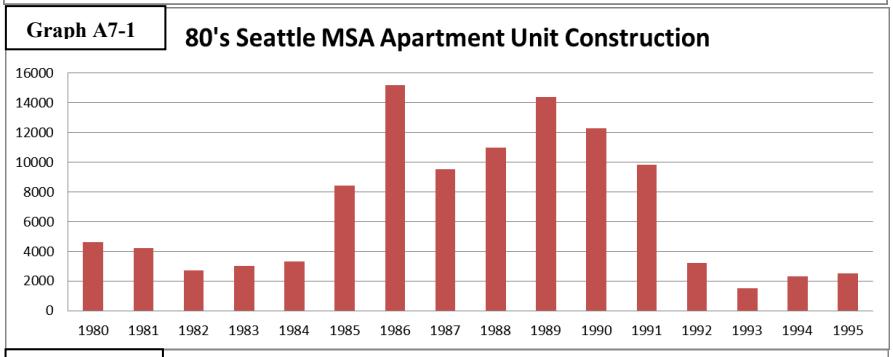
**Graph A7-1** illustrates these same data points from 1980-1995 for closer comparison to the King County and Seattle King Eastside areas (SKEA).

**Graph A7-2** illustrates the King County apartment construction volumes during this same time period as **Graph A7-1**. This demonstrates a similar bubble pattern at the County level as at the MSA level.

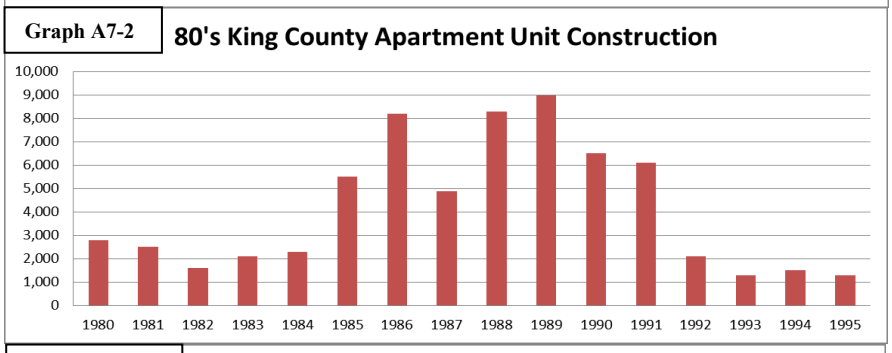
Graph 3F1



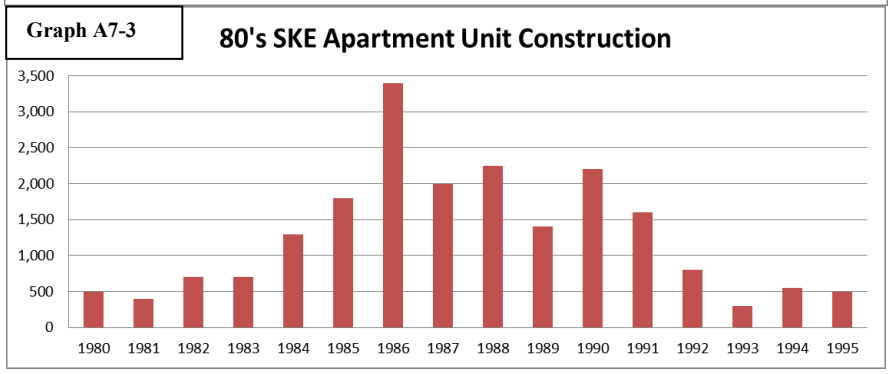

Graph A7-1




Graph A7-2



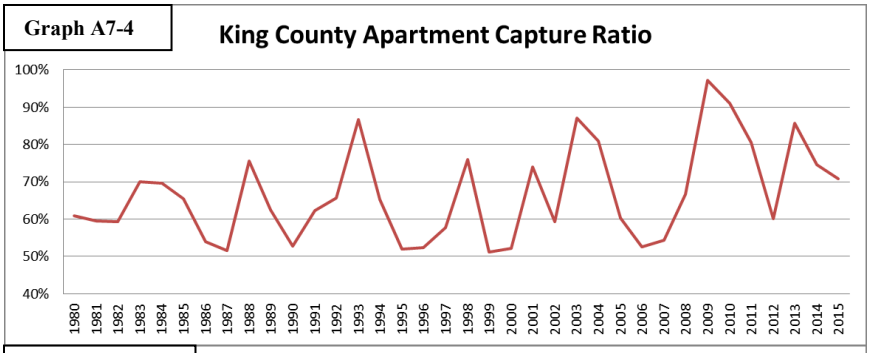

Graph A7-3



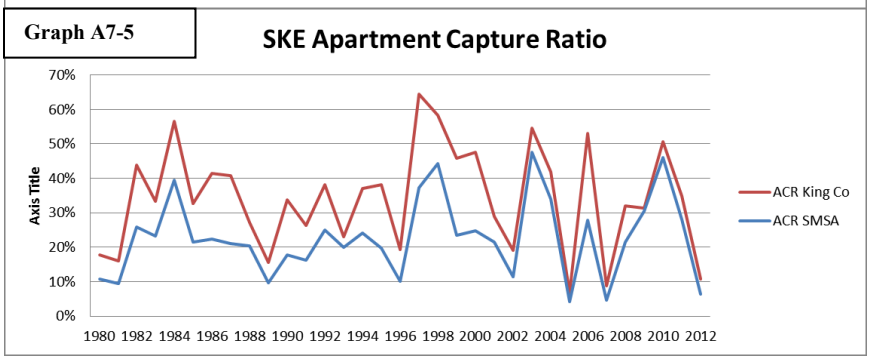

**Graph A7-3** illustrates the SKE apartment construction volumes during this same time period as **Graph A7-2**. This demonstrates a similar bubble pattern at the SKC level as at the County and MSA levels.

**Graph A7-4** illustrates the King County Apartment Capture Ratio (ACR) starting in 1980 and continuing through the forecast period. This demonstrates a relatively normal ACR during the 80's. This indicates that the apartment boom was spread evenly throughout the MSA during the 80's. Given the sprawling growth patterns at the time, this doesn't rule out the possibility of Microsoft being a good case study, but more analysis at a closer level will be needed.

Graph A7-4




Graph A7-5




**Graph A7-5** illustrates the ACR for the Seattle King Eastside (SKEA) from 1980-2012. Although this demonstrates a spike in the 80's, it shows a bigger and longer lasting spike in the 90's, during the ".com" boom. The conclusion is that Microsoft can be used as a case study, but not during the 80's time period. It will have to be during the 90's. Another conclusion is that the 80's boom in apartments may have still been related to Microsoft, but the apartment development was so sprawling that it is difficult to make a clear connection. After reviewing the unit development volumes, the totals are very low at the SKE level and are not insightful. The final conclusion is that Microsoft or the entire tech industry located in Redmond has had little to no impact discernible on the apartment market at any point in time.

After consulting with Professor George Rolfe about this issue, the driver of the apartment boom was caused by a credit crunch or a freeze in the mortgage credit market. The technical issue appears to be that interest rates were increasing at such a fast rate that in the normal 30-90 days it takes to close a home sale, the interest rate would have increased significantly enough that the bank would not honor the agreement. If the bank did honor the agreement, they feared becoming insolvent due to inflationary returns.

## Appendix A8: Alternative Methods

Although there were several alternative methods tested throughout the creation of this net absorption model, due to a lack of quantitative formulaic methodology, these alternative methods were eventually discarded as too experimental. There was also a geographic analysis of apartment and GMA, which was also discarded.

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