Market Delineation

by David A. Braun, MAI, SRA

There is a large amount of confusion about what is and is not a proper comparable for a particular subject property in an appraisal. There are many reasons for this confusion, such as directives in value definitions (using foreclosed properties or not), client requirements, conditions of the sale, and the various types of analyses the data can be used in (three sales on a grid or hundreds of sales to be used in a statistical analysis). A comparable can be a sale, active listing, pending contract, expired listing, etc. The type of comparable, however, is not critical to this discussion as it applies to all of these types.

Comparable selection requires a fundamental understanding of how real property markets behave. An understanding of the interaction of real property markets enhances the ability to select meaningful comparable properties. This article sheds new light on the process of market delineation. It helps the reader process this confusing subject by clarifying some old terms and introducing some new terms. This new footing allows the reader to better understand what a market is and why it behaves as it does.

Common Market Segment Terminology

The Appraisal of Real Estate states, “Through market/marketability analysis the appraiser breaks down a specific real estate market into market segments (i.e., the market participants), and the appraiser disaggregates the properties by characteristics (e.g., class of property, location).”¹ A number of common terms are used to describe the various market segments, including the following:

- Subdivision
- Neighborhood
- Subject property’s competition, defined by what a single potential purchaser would select

• Subject property’s submarket
• Subject property’s overall market
Each of these terms will be discussed next.

Subdivision
The Dictionary of Real Estate Appraisal defines a subdivision as “a tract of land that has been divided into lots or blocks with streets, roadways, open areas, and other facilities appropriate to its residential, commercial, or industrial sites.” However, subdivision delineation is not useful in describing markets. Subdivisions tend to contain very similar properties, especially those properties in the same phase. This may explain why a specific class of purchasers will tend to shop in specific area where the properties contain the specific characteristics they desire. Properties in the same phase of a subdivision are typically very similar to one another and it is likely they are in the same market, but a subdivision is too narrow of a description for describing a market.

Neighborhood
A neighborhood is “a group of complementary land uses; a congruous grouping of inhabitants, buildings, or business enterprises.” A neighborhood focuses on a grouping that leans toward geographical location. Neighborhood boundaries are often exaggerated in appraisals. This exaggeration is common when the client requires that all sales be in the subject’s neighborhood. The neighborhood may be useful in describing the immediate area around the subject property, and useful when describing requirements for comparable selection. However, the delineation of a neighborhood is of little use in the identification of the overall market.

Competing Property that a Single Potential Purchaser Would Select
In the past few years, a new definitional term for a specific, narrow part of the overall market has emerged. This looks at the pool of properties in the market that a single potential purchaser may select from in addition to the subject property. Consider the following statement from Fannie Mae regarding its “Market Conditions Addendum” (Form 1004MC):

When completing [the Inventory Analysis] section, the appraiser must include the comparable data that reflects the total pool of comparable properties from which a buyer may select a property in order to analyze the sales activity and the local housing supply. [Emphasis added.]

The interesting twist here is that the pool of properties is defined as properties “which a buyer may select.” This statement implies a submarket of the subject property’s overall market. Appraisers understand that most markets vary in values that are too wide for only one class of purchasers to participate in. Fannie Mae’s intention to promote comparable selection based on where purchasers shop is fundamentally correct, but its wording, “a buyer,” is too restrictive. Further, the wording is ill defined: it is not clear if Fannie Mae’s intention was to mean all properties available or all properties within the price range of a potential purchaser. If the latter interpretation is applied by appraisers, reviewers, and underwriters it often will result in an insufficient number of comparables to analyze.

Subject Property’s Submarket
In general, a submarket is a partial group of the overall market and is based on some defined differential. Submarket differentials can include property characteristics, such as size, age, number of bedrooms, type of use, or geographical area within a specific market.

For the purposes of this article, the subject property’s submarket is considered as a submarket of the subject’s overall market. The subject’s submarket is best defined as a specific collection of properties, within the subject’s overall market, that the same sets of potential purchasers would consider and have the ability to purchase as well as the subject property. The subject property’s submarket is not as narrow as a single purchaser’s submarket because in a subject’s submarket there is some overlap in the properties that similar but different purchasers will shop. The properties that potential purchaser’s shop is largely determined by the potential purchaser’s price range. The high and low of this range is represented by the

3. Ibid., 133.
5. Similarly, The Dictionary of Real Estate Appraisal defines a submarket as “a division of a total market that reflects the preferences of a particular set of buyers and sellers.” The Dictionary of Real Estate Appraisal, 5th ed., 189.
most and the least that a particular purchaser will pay. Prior to the 2006 housing crash, a purchaser’s high-end price range was typically determined by the maximum loan amount the purchaser qualified for plus some equity. In the post-housing crash market, the high end of a purchaser’s price range is more likely to be less than the maximum loan amount. For example, assume that values in the subject’s overall market vary from $200,000 to $500,000, and the purchaser will only consider properties in the range of $325,000 to $400,000 with some specific requirements for location and the property characteristics. This value range goes a long way to defining the subject property’s submarket.

Figure 1 shows that each individual property is really shopped by multiple individual buyers. This means that the subject property’s submarket is made up of many individual buyers with the same and with different price ranges. The individual purchasers who would shop the same property are called a set of potential purchasers.

Figure 1: Sets of Potential Purchasers

Purchasers’ Price Ranges

- $200,000 to $240,000
- $210,000 to $250,000
- $220,000 to $260,000
- $230,000 to $270,000
- $240,000 to $280,000

The subject property’s submarket is fairly restrictive and can result in very few comparables. If the client wants a comparison analysis with three to six sales, then narrow criteria such as the subject property’s submarket area may be prudent. However, if the analysis is paired sales, regression, or market value trending, then a submarket search criteria may result in an insufficient number of sales to produce credible or reliable opinions.

Subject Property’s Overall Market

The subject property’s overall market is the general market the subject property is a part of.

The goal in discussing definition of terms is to improve our current understanding of what markets are, which will aid in developing sound methods of market delineation—the first step in comparable identification. To do so, we need to include some required conditions of a market that can be objectively tested for. The following study of market modeling and the application of regression analysis allows for new testing methods to be applied in this endeavor.

Two Requirements of a Market

A real estate market consists of “buyers and sellers of particular real estate and the transactions that occur among them.” This definition emphasizes that a market is not the bricks and block, but rather the buyers and sellers. A market then is not really defined as a geographical location, but by which properties a particular class of buyers shop. The important concept is that markets are more about people than buildings. Where markets are concerned, it is important to think of who will be purchasing and what properties they desire based on property characteristics and location; the least consideration is the geographical boundaries they tend to shop in.

Who → What & Location → Geographical Boundaries

An overall market includes a collection of properties with two required conditions:

1. Specific sets of potential purchasers that shop these properties, and

2. Property value relationships that tend to conform to a single market model.

Both the requirements must be met to prove that a property is a part of a specific market. The first requirement means the same sets of potential purchasers (based on the varying price ranges) shop these properties. Properties that the sets of potential purchasers do not consider are by definition in a

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6. Ibid., 160.
different market. The second requirement means that the same property characteristics have a relationship to the sale price or value, and each characteristic has about the same impact (as measured by the coefficients) from one property to the next. All properties must reasonably fit the same market model to be in the same overall market.

**Market Modeling**

A market model is a mathematical representation of how a market behaves. Typically a coefficient is associated with each variable (property characteristic). The purpose of the model is to predict values based on the variables. As mentioned, all properties must reasonably fit the same market model to be in the same overall market.

For example, suppose the market model is as follows:

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\text{Value} = (\$50,000 \times \text{Acres}) + (\$75 \times \text{GLA}) + (\$10,000 \times \text{BRs}) + (\$7,500 \times \# \text{Gar Parking}) + (\$3,000 \times \text{Age})
\]

Then, if there is Property A with 1.0 acres, 2,000 square feet, 3 bedrooms, and a double garage, and it is 20 years old, it will be valued as follows:

\[
\text{Value} = (\$50,000 \times 1) + (\$75 \times 2,000) + (\$10,000 \times 3) + (\$7,500 \times 2) + (\$3,000 \times 20)
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= 185,000
\]

Consider Property B that is across town from Property A. While Property A is near several industrial plants, Property B is near some technology parks. The houses around Properties A and B are physically similar to each other. However, the buyers that shop properties near the technology parks, are typically younger, better educated, and have higher incomes. They prefer larger homes with more bedrooms, large lot size is not an issue, and they tend to desire garages. They do not shop across town where Property A is located, and employees of the industrial plants do not tend to shop for homes across town near Property B. Property B is almost identical to Property A, but the market area where Property B is located has a different market model based on the different desires of the type of people who shop in this subdivision. This market model is as follows:

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\text{Value} = (\$40,000 \times \text{Acres}) + (\$100 \times \text{GLA}) + (\$15,000 \times \text{BRs}) + (\$10,000 \times \# \text{Gar Parking}) + (\$3,000 \times \text{Age})
\]

Then, Property B will be valued as follows:

\[
\text{Value} = (\$40,000 \times 1) + (\$100 \times 2,000) + (\$15,000 \times 3) + (\$10,000 \times 2) + (\$3,000 \times 20)
\]

\[
= 245,000
\]

This error is called a regression residual in statistics. A residual greater than 15% is a clue that something might be amiss. In this case, the properties are not in the same overall market because the buyers from the two areas behave very differently and the potential purchasers do not shop in both areas. This results in different value relationships between the property characteristics and the overall value of the property.

Regression analysis is a form of market modeling. It allows for a comparatively quick analysis of a large number of sales within a market. Appraisers are aware that regression analysis is useful in forming an opinion of value, trending values over time, and extracting line-item adjustment rates. Now we can also consider it as a tool for market delineation.
Overall markets are differentiated based on distinct sets of potential purchasers that constitute a subject property's submarket, but at this point there is a looming question that must be addressed: How can two subject submarkets be in the same overall market if they are made up of distinct sets of buyers? Asked another way, if an overall market is influenced by many sets of purchasers with different price ranges, how do all the properties tend to conform to a single market model? This is where appraisers can get stumped and just agree that all comparables should either be in the subject's neighborhood or should be in the subject property's submarket, possibly resulting in enough sales for a comparison grid, but not enough to trend values over time, perform a paired sales analysis, or regression analysis.

However, the relationship of the submarkets in an overall market can be explained by what can be called the principle of cascading submarkets. It is not a requirement that legitimate comparables only be the ones that are a part of the subject property's submarket. Consider that an overall market that ranges in values from say $200,000 to $500,000 has many of sets of submarkets for the different subject properties. This is because there are many purchaser price-point ranges within the $200,000 to $500,000. While one buyer has a range of $300,000 to $375,000, another buyer's range may be $310,000 to $400,000, or $330,000 to $430,000, and so on. This creates a number of submarkets, beginning at $200,000 and going to $500,000.

In Figure 2, the price ranges for individual potential purchasers are presented in hypothetical ranges. The arrows identify the properties that each of the individual purchasers can shop based on these price ranges.

Each of the individual properties has a subject property's submarket that consists of the overlapping price ranges for the individual purchasers; this is shown by the cascading lines for Properties A through E in Figure 2. These submarkets tend to cascade throughout the overall market. The illustration also shows that each individual property is simultaneously influenced by multiple cascading submarkets. Notice the convergent points, labeled 1–3 in the illustration, which identify where at least three different subject submarkets influence the same properties at the same time.

The principle of cascading submarkets holds that because each individual property is acted upon simultaneously by many submarkets, it is influenced by competitive market forces that result in a consistency in the behavior of the overall market by a market pricing mechanism. This prevents a property from being priced below an inferior one and vice versa. The governing market behavior is based on economic theories, including the principle of supply and demand, the concept of competition, the principle of substitution, and the principle of anticipation. The cascading set of submarkets explains why properties tend to be consistently valued to one another, and also why individual property components tend to affect the overall value the same way. This means that properties that are a part of the same market will tend to conform to a single market model. The principle of cascading submarkets explains why any comparable that is a part of the same overall market as the subject property is a comparable that has the potential to lead to a credible opinion.

The cascade of buyers shopping several properties within their price range is not continuous. There will be properties that the potential purchasers will not consider. This may be caused by location-related factors, such as the need to cross rivers or mountain ranges, and these natural geographical boundaries would be familiar to the appraisers. However, there also may be less distinct reasons buyers will not consider a property, including physical characteristics (age, size, land size, number of bedrooms, etc.). So, a property should not be viewed as “in” a market, but rather as “part of” a market, and the boundaries of a market should be determined by whether a property is acceptable to purchase based on buyer parameters.

Typically groups of purchasers have similar property requirements, which acting together form a market and define its behavior. For example, suppose there is a 40-year-old subdivision with small bungalow-type homes that merges with a 25-year-old subdivision of brick ranch, trilevel, and split-foyer homes. In addition, almost in the center of these subdivisions there is a small subdivision of new to 5-year-old, $500,000 to $800,000 properties. While these three subdivisions are contiguous and share many of the same streets, they represent three different markets. It would not be proper to use the sales from one of these areas as comparables for one of the other subdivisions even though they are very close in proximity. This situation is a real challenge for automated valuation models (AVMs), which often choose comparables based on proximity to the subject property.
Markets are dynamic. There is a constant surging and ebbing of how the different sets of purchasers behave, which results in changes in property values and value relationships. These changes are influenced by the four factors of value: social forces, economic circumstances, government controls and regulations, and environmental conditions. For example, consider a market that has historically ranged in value from $200,000 to $500,000. The marketing time and the change in value over time had been about the same for all of the properties in this market. Since the housing market crisis came into play, however, the larger and better houses with the higher values have been selling much slower and their values have been falling faster than the rest of the overall market. This is a common scenario in the market as most appraisers have reported the housing crash has had a greater negative effect on upper-end residential properties. In this case, the original overall market of $200,000 to $500,000 has split into two distinct markets based on the fact that the higher-end and lower-end properties are behaving very differently from one another in terms of value relationships.
Conclusion

The purpose of this article is to provide new insights into the subjective behavior of markets to enable the appraiser to make better decisions in comparable selection.

This article explores the term purchaser’s price range and offers a restructured definition of subject property’s submarket. In addition, a new condition for determining when a property is or is not a part of a market, called consistent value relationships, and a new principle on market behavior, called cascading submarkets, have been introduced. An awareness of these terms allows for a more objective understanding of market delineation.

A market is a specific collection of properties, and the discussion in this article explains that these properties are often not contiguous to each other. In fact, some residential properties may be miles apart and some commercial properties may be scattered across an entire region of the country and still may be a part of the same overall market and be comparable properties. A market is not really a place; it is a collection of individual properties whose value relationships are defined by the same sets of potential purchasers that cascade throughout the market. The tests to determine if properties are in the same market are whether the same group of potential purchasers tend to shop these properties, and whether the properties’ value relationships tend to conform to a single market model.

Markets are dynamic, so appraisers must continuously evaluate which markets the individual properties are part of. Local sales agents are the best source for identifying individual sets of potential purchasers and the properties they shop for. When possible, appraisers should ask the sales agent or purchaser of the property being appraised about what other properties were considered before settling on the subject property. Regression analysis can identify the market model by which a market tends to operate. This is useful in determining if the valuation relationships for a property tend to match the behavior of subject’s market. A credible analysis requires that the proper data be used. Market delineation is the primary analysis that leads to the identification of the appropriate comparables, so its importance cannot be overstated.

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**Web Connections**

*Internet resources suggested by the Y. T. and Louise Lee Lum Library*

Federal Housing Finance Agency
- Downloadable House Price Index Data
- House Price Index News Releases

Hanley Wood Market Intelligence

Monthly House Price Indexes for Census Divisions and U.S.
[http://explore.data.gov/Prices/Monthly-House-Price-Indexes-for-Census-Divisions-a/uhxr-wv7z](http://explore.data.gov/Prices/Monthly-House-Price-Indexes-for-Census-Divisions-a/uhxr-wv7z)

S&P/Case-Shiller Home Price Indices